User Manual

Ver 1.0

FCC Compliance Statement
Model Name:
HDRP4 / HDRP8 / HDRP16 / HDRPJ16
This device complies with Part 15 of the FCC Rules. Operation is Subject to the following two conductions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

■ WARNING

Unauthorized reproduction of all or part of this manual is strictly prohibited.
The figures in this manual are for illustration purposes only (may differ from the actual product).
The specifications and design of the product are subject to change without prior notice for purposes of quality improvement.

■ CAUTION

To get the best use out of the product, be sure to read the cautions before using the product. For safety, please take note of the following:

- **Before using the product**

1 To prevent electric shock when installing, moving, or opening the DVR and peripheral devices, connect and disconnect the cables as instructed. All cables must be connected to grounded power outlets.
2 If the product is installed near a power outlet, make sure it can be unplugged easily.
3 Do not use the DVR in water or wet locations.
4 Keep the plastic packing materials used for the DVR or other peripheral devices out of reach of children (may cause suffocation).

- **Installation Environment of the DVR**

1 Maintain an operating temperature of 5˚C ~ 40˚C and operating humidity of 10% ~ 80%.
2 Install the DVR in a safe place that is free from external vibration.
3 Install the DVR in a well-ventilated place.
4 To protect the hard disk from data loss and breakdown, install the DVR away from magnetic materials.
5 When using a non-standard rack, use a separate table with sufficient spacing, i.e., 60cm from the floor, 50cm from the ceiling, and 20cm from the side and back walls and other objects.

- **Safety Notes on the DVR**

1 Keep the product away from heat-generating devices such as heaters.
2 Do not use a damaged power cord.
3 To prevent problems due to magnetic interference and electric surge, use only grounded cables and power outlets
4 If the power cord is connected, do not touch the power unit. If the power cord is connected, electric current is still flowing internally even after the switch is turned OFF.
5 Do not place a heavy object on top of the product.
6 Do not drop a conductive object in the ventilation holes.
7 Allot sufficient space for system cabling.
8 Incorrect system setup may cause malfunction.
9 Shut down the system normally as instructed in the manual.

- **Safety Notes on the Lithium Battery**

1 Replace lithium batteries as instructed to avoid danger.
2 Dispose used lithium batteries properly.

【Warnings and Cautions are indicated as follows】

Warning	Possible injury or product damage
Caution	Risk of minor injury or product damage
	Caution for the usage of the product
	Information for the usage of the product

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Chapter 1. Introduction

1 - 1 HD-SDI Real-Time Pro DVR Models

HDRPJ16

HDRP8 / HDRP16

HDRP4

1 - 2 Components

After unpacking the product, check to determine if the following accessories are included:

- Remote Controller
- CD (VMS, VMS Manuals, User Manual)
- AAA 1.5V Batteries 2ea
- Power Cord
- Quick Setup Guide

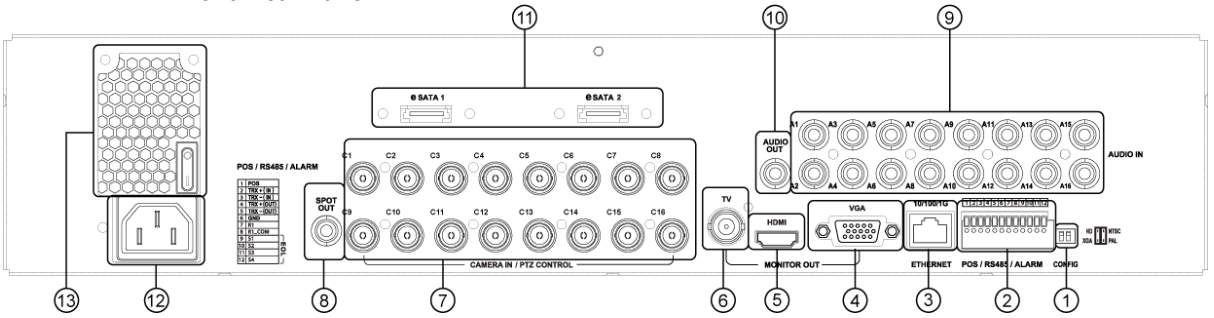
1 - 3 Product Introduction

1080p/720p/960H Real-Time Recording
16/8/4 Channel Audio Recording
16/8/1 Channel Spot Output
Video output ports (HDMI, VGA, BNC)
Video output modes (Full HD, XGA, SDTV)
6 HDD Capacity (HDRPJ16)
3 HDD Capacity (HDRP8 / HDRP16)
2 HDD Capacity (HDRP4)
Jog Shuffle (HDRPJ16)
1 Channel POS Interface
Pre-Alarm Recording
Auto E-mailing Notification Max. 5 Users
Privacy Zone Masking
Covert Channel
Digital Single/Multi-Zoom
Smart Search
Text Detection/Search
Multi-Time/Day / Index (Event) Search/Playback
Panorama Playback
Still-Image Capture
Full HD resolution
Firmware Upgrade at Remote PC Site
Remote Setup, Backup, and Relay control
Screen Saver
USB/DVD Backup with Self-Executable Player (Backup Player)
Web Monitoring in PC (Built-in Web Server)
Smart Phone Viewer (Android, iOS)
Mobile Web Viewer (3G viewer)
NTP, DST, DDNS, DHCP

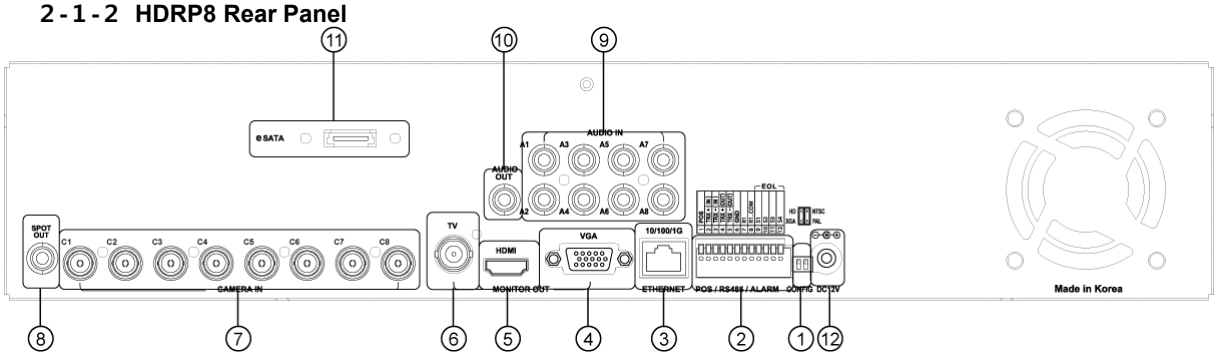
Chapter 2. Installation and connection

2-1 Names and Features of Each Part

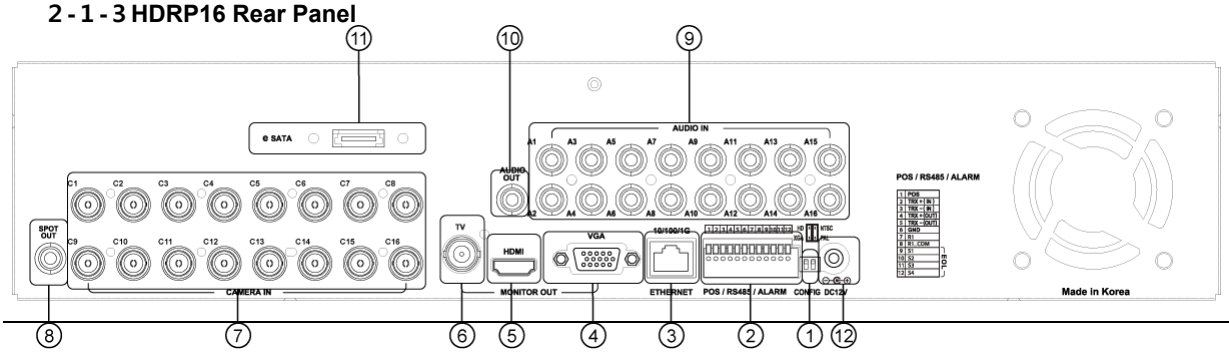
2-1-1 HDRPJ16 Rear Panel



2-1-2 HDRP8 Rear Panel

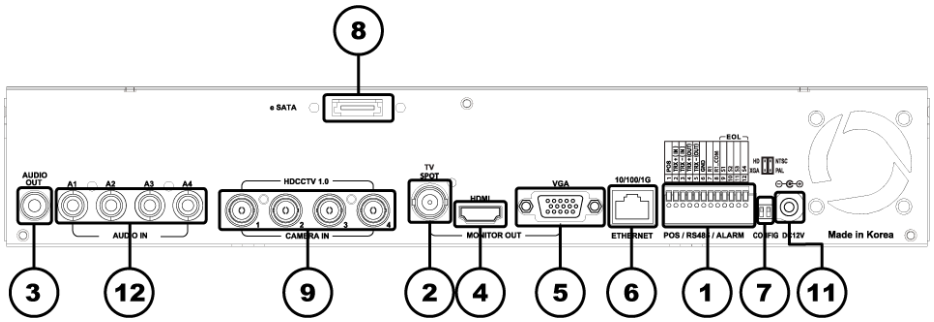


2-1-3 HDRP16 Rear Panel



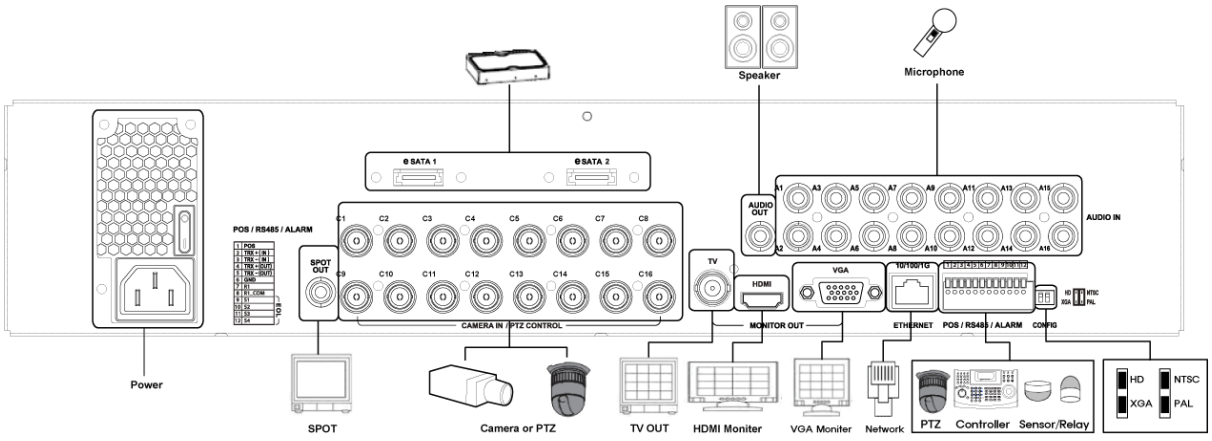
No.	Name	Feature	Type
1	**CONFIG**	NTSC HD / XGA	DIP S/W, 2-pin
2	**Terminal Block**	RS-485 / SENSOR IN / RELAY OUT / POS	Terminal Block
3	**Ethernet**	Cable Modem, Ethernet 10/100 Base-T, Network Connection	RJ-45
4	**VGA-OUT**	VGA Monitor or LCD Monitor Connection	D-SUB 15P
5	**HDMI**	HDMI Output	HDMI type-C
6	**TV**	CVBS Output	BNC
7	**CAMERA IN**	Video Camera Connection	BNC
8	**SPOT**	CCTV monitor connection to output images of the channel generating an event signal	BNC
9	**AUDIO IN**	Audio Input Connection	RCA
10	**AUDIO OUT**	Audio Output Connection(Line Only Output)	RCA
11	**e-SATA**	External SATA	USB Type A, e-SATA
12	**Power**	90 ~ 250V, 50/60Hz, 80 Watts (H-model series)	AC Inlet
13	**Ventilating Opening**		Power Supply Fan

2 - 1 - 4 HDRP4 Rear Panel

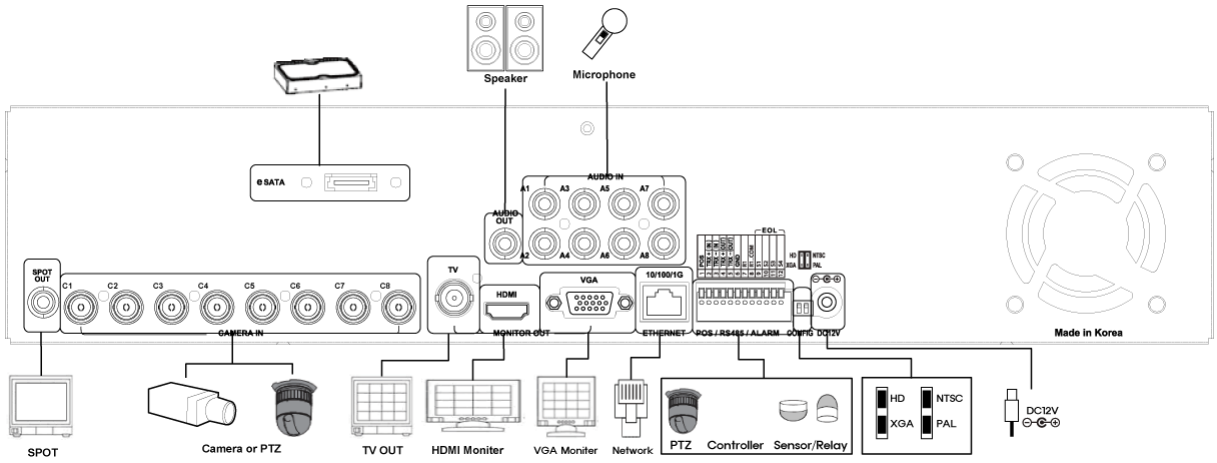


No.	Name	Feature	Type
1	**Terminal Block**	RS-485 / SENSOR IN / RELAY OUT / POS	Terminal Block
2	**SPOT / TV**	CCTV monitor connection to output images of the channel generating an event signal	BNC
3	**AUDIO OUT**	Audio Output Connection(Line Only Output)	RCA
4	**HDMI**	HDMI Output	HDMI type-C
5	**VGA-OUT**	VGA Monitor or LCD Monitor Connection	D-SUB 15P
6	**Ethernet**	Cable Modem, Ethernet 10/100 Base-T, Network Connection	RJ-45
7	**CONFIG**	NTSC/PAL HD / XGA	DIP S/W, 2-pin
8	**e-SATA**	External SATA	USB Type A, e-SATA
9	**CAMERA IN**	Video Camera Connection	BNC
11	**Power**	12V/5A - Level 5, 60 Watts	AC Inlet
12	**AUDIO IN**	Audio Input Connection	RCA

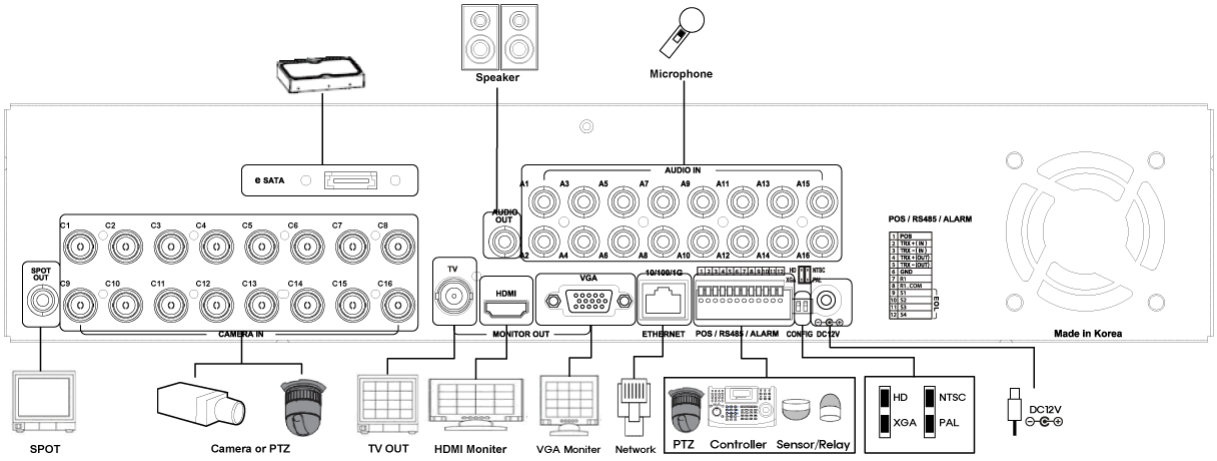
2 - 2 Installation and Connection



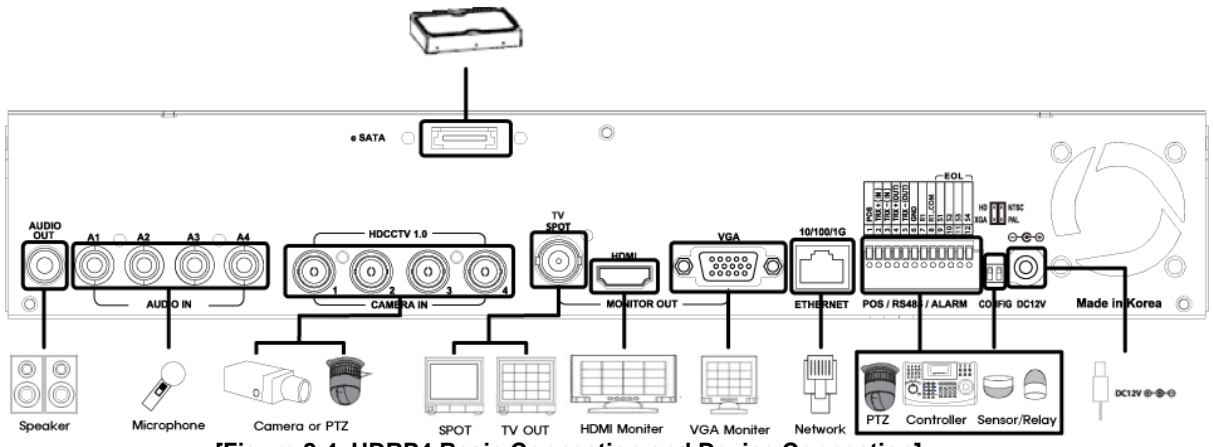
[Figure 2-1. HDRPJ16 Basic Connection and Device Connection]



[Figure 2-2. HDRP8 Basic Connection and Device Connection]



[Figure 2-3. HDRP16 Basic Connection and Device Connection]



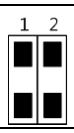
[Figure 2-4. HDRP4 Basic Connection and Device Connection]

2-2-1 Basic Connections

※ By referring to above **[Figures 2-1 ~ 2-4],** make connections accordingly:

Connection Order	Connection Device	DVR Terminal
1	CCTV Camera	Rear Panel Video IN
2	CCTV Audio	Rear Panel Audio IN / OUT
3	CONFIG SWITCH Setup	Rear Panel Left 2ea Switch (Refer to below; CONFIG SWITCH Setup)
4	CCTV Monitor	Rear Panel TV / SPOT
5	VGA Monitor / LCD Monitor	Rear Panel VGA-OUT
6	HDMI Monitor	Rear Panel HDMI
7	Loop	Rear Panel Loop

■ **CONFIG SWITCH Setup**

	Switch 1	Switch 2
		

2-3 Connection of Other Devices

	There are differences between the various models regarding connection of other devices.

Item	HDRPJ16	HDRP8	HDRP16	HDRP4
Audio	16	8	16	4
Sensor	4	4	4	4
Relay	1	1	1	1
POS	1	1	1	1

Connect the PTZ controller cable, audio input/output, network, and sensors as shown below:

	Connecting Device	DVR Terminal
1	SPOT Monitor (CCTV Monitor)	Rear Panel SPOT
2	Mike / Speaker	Rear Panel Audio Input / Audio Output
3	LAN Cable	Rear Panel Ethernet
4	PTZ Camera	Rear Panel Terminal Block
5	Sensor / Relay / POS	Rear Panel Terminal Block
6	Keyboard controller	Rear Panel Terminal Block

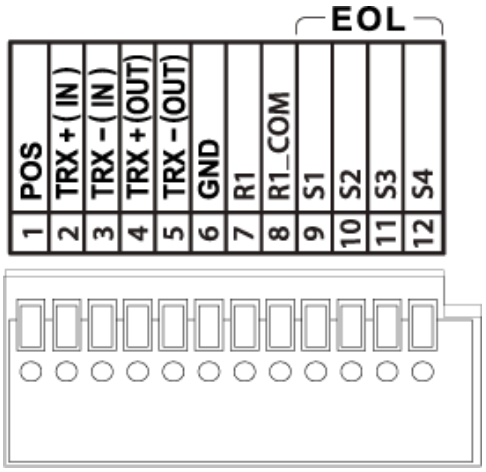
1) SPOT Monitor

Connect Spot Monitor to the rear SPOT terminal.
HD-SDI Real-Time Pro DVRs support 1ea SPOT terminals.

2) Audio Input/Output

HDRPJ16 and HDRP16 support 16ea audio inputs. HDRP8 supports 8ea audio inputs. HDRP4 supports 4ea audio inputs.

3) Terminal Block



[Figure 2-6. Terminal Block and Description]

The terminal block in the rear of the product is for PTZ / Sensor / Relay / POS connections. The numbers on the terminal block may be different depending on the model.

① PTZ Camera/Keyboard Controller

Connect PTZ control cable: TRX+ (No. 4), TRX- (No. 5) and GND (No. 6) to Terminal Block on rear panel of DVR. Refer to APPENDIX for supported PTZ cameras in this manual. Connections are the same for keyboard controllers.

Caution The PTZ Camera may not work properly if GND is not connected.

② Sensor/Relay/POS

Connect Sensor/Relay/POS to the terminal block directly depending on the model.

Sensor and Relay Type
NC (Normal Close) : Normally closed; opens when a signal is received
NO (Normal Open) : Normally open; closes when a signal is received

(1) Sensor Connection

① Connect the sensor to the terminal block S1 ~ S4 depending on the model.
② Each input terminal is connected relatively with the channel number.

(2) Relay Connection

③ Relay the output signal to external devices such as Alarm and Siren.
④ Connect the relay to R1 terminal block depending on the model.

(3) POS Connection

⑤ Connect the POS device.
⑥ Connect the POS to Terminal Block POS.

Caution The external alarm device may require the power supply depending on its type. Be cautious.

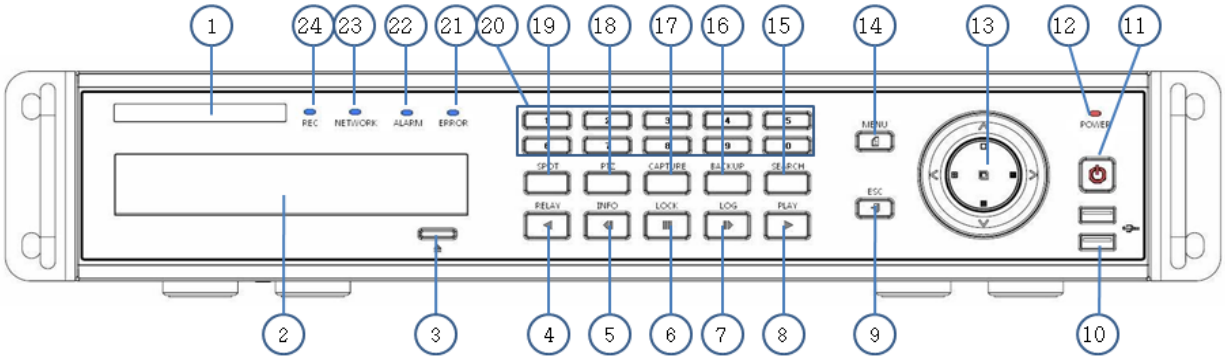
Chapter 3. Operation and Setup Tools

HD-SDI Real Time Pro DVR can be controlled by using the front panel buttons, front panel, remote controller, jog-shuttle (HDRPJ16 only), and mouse.

3-1 HDRPJ16 Front Panel

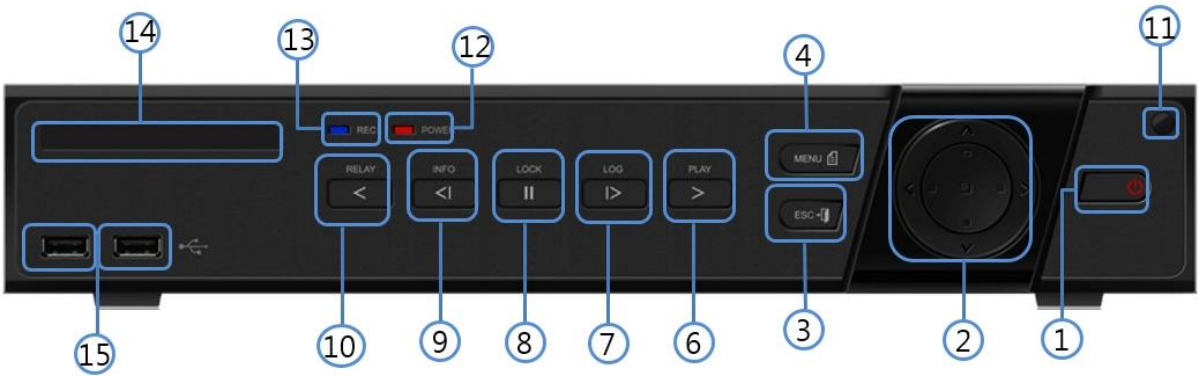
No.	Name	Function
1	**LABEL**	Brand Name and Model Name
2	**LED DISPLAY**	HDD and System Status Indication LED
3	**Number Buttons**	Channel Selection or Number Input
4	**MOVE / DISPLAY / Select**	Move from one category to another / Change the display mode / Select
5	**MENU**	Various Modes
6	**JOG-SHUTTLE**	Speed in Playback Mode / Play Direction / Frame Play
7	**POWER / POWER LED Display**	Turn the system power ON or OFF & POWER Indication LED
8	**USB Port**	Connection ports for USB mouse and/or USB flash drive
9	**ESC**	Exit the current menu or move to the upper menu
10	**SPOT**	Spot Control
	PTZ	PTZ Pan/Tilt/Zoom Control
	CAPTURE	Capture the displaying image into USB
	BACKUP	Save the recorded image at other media.
	SEARCH	Search the recorded Image
11	**Reverse Play / Fast Reverse** **RELAY**	Backward Playback/Rewind (in Playback Mode) Relay Control (in Monitoring Mode)
	Reverse Frame by Frame **STATUS**	Backward Playback Frame by Frame (in Playback Mode) View System Configuration (in Monitoring Mode).
	Pause **LOCK**	Pause (in Playback Mode) Lock (in Monitoring Mode)
	Forward Frame by Frame **LOG**	Playback Frame by Frame (in Playback Mode) System Log View(in Monitoring Mode)
	Forward Play / Fast Forward **PLAY**	Playback/Fast Forward (in Playback Mode) Instant Playback (in Monitoring Mode)

3 - 2 HDRP8 / HDRP16 Front Panel



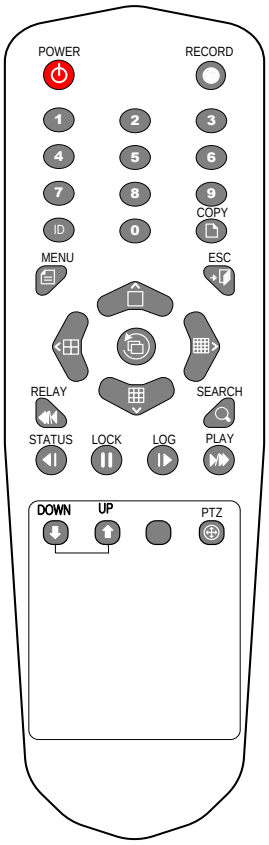
No	Name	Feature
1	**LABEL**	Brand Name and Model Name
2	**ODD**	CD-RW and DVD-RW
3	**Eject**	CD and DVD Media
4	**Reverse Play / Fast Reverse RELAY**	Backward Playback/Rewind (in Playback mode) Relay Control (in Monitoring mode)
5	**Reverse Frame by Frame STATUS**	Backward Playback Frame by Frame (in Playback mode) View System Configuration (in Monitoring mode)
6	**Pause LOCK**	Pause (in Playback mode) Lock (in Monitoring mode)
7	**Forward Frame by Frame LOG**	Playback Frame by Frame (in Playback mode) System Log View(in Monitoring mode)
8	**Forward Play / Fast Forward PLAY**	Playback/Fast Forward (in Playback mode) Instant Playback (in Monitoring mode)
9	**ESC**	Exit the current menu or selects the upper menu
10	**USB Ports**	Connection ports for USB mouse and/or USB flash drive
11	**POWER**	Turn the system power ON or OFF
12	**POWER LED**	Power LED On/Off
13	**MOVE / DISPLAY / SELECT**	Moves from one category to another or changes the display mode
14	**MENU**	Various Modes
15	**SEARCH**	Search Recorded Images
16	**BACKUP**	Save recorded images at other media
17	**CAPTURE**	Capture a playing image into USB
18	**PTZ**	Change Pan/Tilt/Zoom Mode
19	**SPOT**	SPOT Control
20	**NUMBERS**	Channel Selection and Number Input
21	**ERROR LED**	Blue LED turned on upon fan defect or recording interruption
22	**ALARM LED**	Blue LED turned on upon the occurrence of event or motion
23	**NETWORK LED**	Blue LED turned ON during remote access
24	**RECORD LED**	Blue LED turned on upon HDD operation

3 - 3 HDRP4 Front Panel



No.	Name	Function
1	POWER	Power On/Off System
2	MOVE & DISPLAY	Moves from one category to another or changes the display mode
3	ESC	Exits the current menu or selects the upper menu
4	MENU	Various Modes
6	PLAY	Playback/Fast Forward
7	Frame by Frame	Play Frame-by-Frame
8	PAUSE	Pause during playback
9	Reverse Frame by Frame	Backward Playback Frame-by-Frame
10	Reverse Play	Backward Playback/Rewind
11	IR Sensor	Sensor for remote controller
12	POWER LED	LED for Power status
13	RECORD LED	Green LED during Recording
14	LABEL	Brand Name and Model Name
15	USB	USB mouse and/or USB flash drive connection ports

3 - 4 Remote Controller: HDRPJ16 / HDRP8 / HDRP16



A) Basic Control Buttons

	POWER	Turn the system power ON or OFF.
	RECORD	Record all channels or stop recording all channels.
1 ~ 0	**NUMBER**	Input of numeric data.
ID	**ID**	Set up the remote controller ID.

B) System Operation and Setup Button

	MENU	Data, Schedule, System Setup
	ESC	Exit the current menu or Move to the upper menu.
	SEARCH	Search recorded images.
	SELECT	Select category or execute automatic screen conversion.
	COPY	Copy recorded videos.
	PTZ	Shift to the PTZ camera control mode.
	MOVE	Move from one category to another or change to the display mode.
	UP/ DOWN	Log Page Up/Down

C) Search Button (Playback Mode)

PLAY	**Play / Fast Forward**	Play/Fast-forward
LOG	**Frame by Frame**	Play forward frame by frame
LOCK	**Pause**	Pause
STATUS	**Reverse Frame by Frame**	Reverse play frame-by-frame
RELAY	**Reverse Play / Fast Reverse**	Reverse play/Rewind

D) Buttons for Other Features (Monitoring Mode)

PLAY	**PLAY**	Play recorded images.
LOG	**LOG**	View system log list.
LOCK	**LOCK**	Lock the system
STATUS	**STATUS**	View system information and change display setup.
RELAY	**RELAY**	View relay status and manual operation.
	※ Setting up the remote controller ID	

	Example) When the remote controller ID is set to 1 Press the **{ID}** button, enter **{0} and {1}**, and press the **{ID}** button again. To control all DVRs with the different ID, set the remote controller ID to 999.

3 - 5 Remote Controller: HDRP4

	POWER	Turn the system power ON or OFF.
	MODE	
	FULL	1 Channel Mode
	QUAD	4 Channel Mode
	9 SPLIT	9 Channel Mode
	16 SPLIT	16 Channel Mode
	SEQ.	Sequence Mode ON/OFF

B) System Operation and Setup Button

	MENU	Data, Schedule, System Setup
	ESC	Exit the current menu or Move to the upper menu
	PREV	Reverse
	PAUSE	Pause
	FORWARD	Forward
	BACKWARD	Playback
	PLAY	Play

3 - 6 Mouse

If mouse is connected to front panel USB, mouse cursor will appear on screen as shown below.

	Mouse Control Functions:	
	Right-click	Monitoring Mode / Move from Play Mode to Monitoring Menu / Pop up or remove Play Menu. Show sub-folder for particular Menu window.
	Left-click	Select Menu.
	Double Left-click	Select Menu.
	Left-click and drag	Move particular window.

3 - 7 Jog-Shuttle

For HDRPJ16 model only: In playback mode, control play direction, speed, and frames.

<table>
<tr><td colspan="2">Speed and Direction Control

Frame Control</td></tr>
<tr><td> </td><td>※ Play Direction Control
Turning the jog right/left plays forward/reverses frame-by-frame.</td></tr>
<tr><td> </td><td>※ Speed and Direction Control
Turning the jog right/left plays forward/reverse x1/x2/x4/x30.</td></tr>
</table>

Chapter 4. DVR Operation Setup

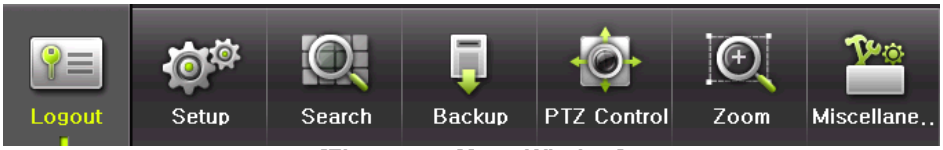
4 - 1 Power ON

① Connect power to DVR after confirming that proper voltage is in use.

② After power cable is connected, booting will occur automatically.

③ When booting finishes, the live screen and channel indication / clock are shown.

④ Right-click with the mouse or press [MENU] on the front panel to open the Menu window as shown below.



[Figure 4-7. Menu Window]

ID and Password are required for initial installation. Default ID and Password are shown below:
[admin : 00000] [User1 : 1111111] [User2 : 2222222]
[User3 : 3333333] [User4 : 4444444].... [User10 : aaaaaaa] [User11 : bbbbbbb]....
※ Password can be changed by navigating: **{Menu} → {Setup} → {System} → {Modify}.**

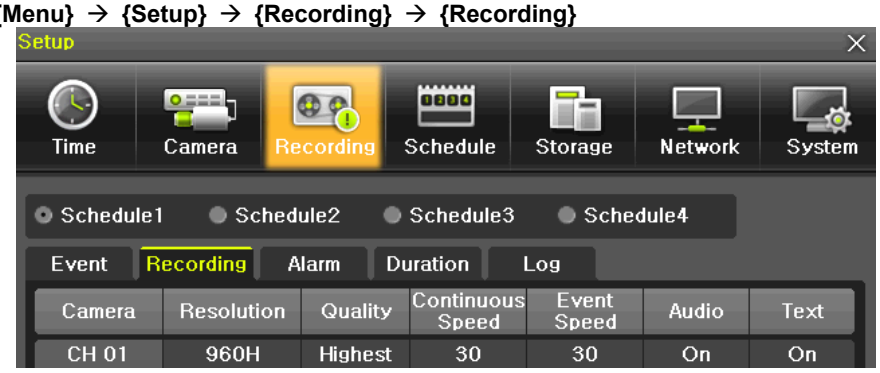
4 - 2 Storage Setup

① Select **{Menu}** → **{Setup}** → **{Storage}** and configure HDD.

For more detail about HDD and external devices, check **[6-5 Storage]**.

4 - 3 Recording Setup

① Select **{Menu}** → **{Setup}** → **{Recording}** → **{Recording}**



② Setup [Recording Resolution]/[Recording Quality]/[Continuous Speed]/[Event Speed]/[Audio]/[Text].

The initial recording setup is **[Recording Resolution: 960H] [Recording Quality: High] [Continuous Speed: Off]**. An example of a possible setup is shown in the image above. For more details, check **[6-3 Recording Setup]**.

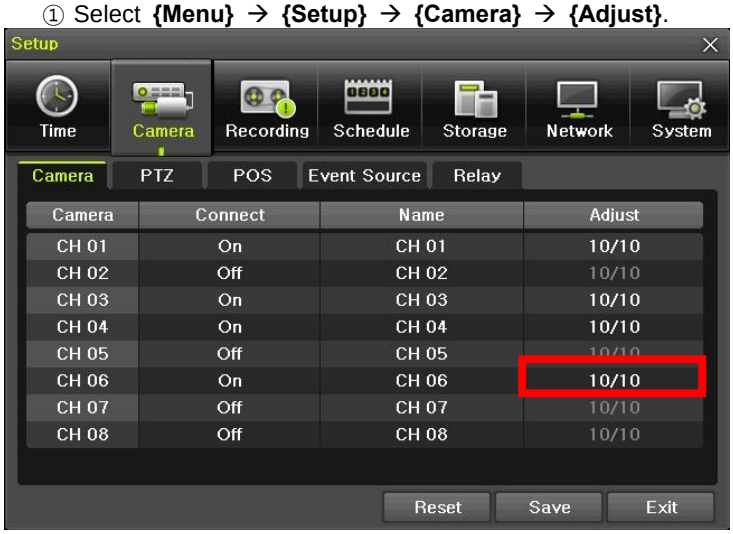
4 - 4 Date/Time Setup

① Select **{Menu}** → **{Setup}** → **{Time}**.

② Configure [Time Server]/[Date and Time]/[Standard Time Zone].

4-5 Camera / TV Setup

① Select **{Menu}** → **{Setup}** → **{Camera}** → **{Adjust}**.



② Setup for [Brightness/Contrast/Color/Hue/Camera Adjustment/TV OUT Adjustment].

4-6 Display Setting and Other Setup

① Select and setup via **{Menu}** → **{Miscellaneous}** → **{Display Setting}**.

4-7 External Device Setup

① Configure external devices here. For more information, see **[2-3 Connection of other devices]**, **[Chapter 5. System Operation]**, **[6-2 Definition]**, **[6-6 Network]**, and **[6-7 System]**.

4-8 Search

① See **[5-6 Search]**, **[5-7 Calendar Search]**, **[5-8 Playback]**, and **[5-10 Recording]** for details.

4-9 Backup

① Backup is available in Monitoring, Search, Log, and Playback Mode.

② See **[5-11 Backup]** for further details.

4-10 DVR Info.

① Navigate to **{Menu}** → **{Miscellaneous}** → **{DVR Info}**.

Caution	**Detailed information for DVR functions are described below in this manual**.

Chapter 5. System Operation

5-1 Real Time Monitoring Mode and Icon

After booting is finished, Audio/Recording Status/Channel Title/Connection Status/Time/HDD Status are displayed as shown below.

[Figure 5-8. Recording Status Window]

※ Recording Event / Recording Mode Indication Icons ※		
Recording Events	M	Motion Detection Recording
	S	Sensor Recording
	A	Audio Recording
	T	Text Recording
Recording Mode	V	Video Recording
	A	Audio Recording
	T	Text Recording

※ Recording Event Icons are still displayed even when recording stops. Recording Mode Icons distinguish recording status.

※ Live Screen Icon ※	
	Video is not connected
	Audio is activated
	Audio is muted
No Signal	Camera has been disconnected

※ Control Bar ※	
①	Full Screen
②	4 Channel Screen
③	8 Channel Screen
④	16 Channel Screen
⑤	ZOOM function
⑥	Auto Sequence Mode
⑦	Date / Time
⑧	HDD Status
⑨	Playback

5-2 System Login

5-2-1 User Account and Authorization

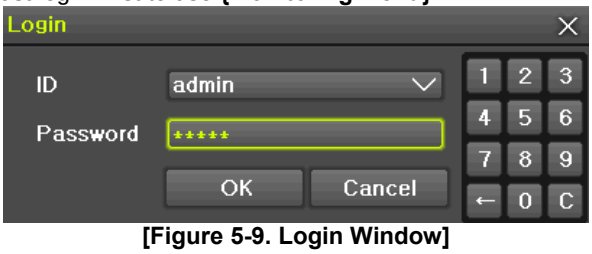
System users are divided into local administrators and general users. The local administrator can use all functions.

Local Admin	The local administrator can use the following functions: System Power On/ Off, Setup, Monitoring, and Playback.
User	Up to 15 users are available for use. Each user can access the above functions depending on whether they've been given the authority or not. For Authorization Setup, navigate to **{Menu}** → **{Setup}** → **{System}** → **{User Registration}**.

※ Functions available for Authorization Setup	
Network Live	View images in real-time via network access
Playback	View recorded images
Copy (Download)	Copy and download images from the network
PTZ Control	Utilize PTZ camera control
Setup	Access Recording, Recording Schedule, System, Storage, Time, PTZ, Network, and Screen Setup
Network Upgrade	Upgrade via remote network
View Covert Channels	Enable viewing covert channels

5-2-2 Login

For security purpose, user must log in first to use **{Monitoring Menu}**.



[Figure 5-9. Login Window]

① On the real-time monitoring window, select **{Menu}** → **{Login}**.

② Enter password or click "Cancel."

5 - 2 - 3 Logout

After logging out, the user cannot use **{Menu}**.

① On the real-time monitoring screen, select **{Menu}** → **{Logout}**.

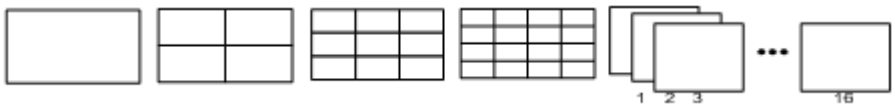
5 - 3 Monitoring

Various monitoring functions are available depending on the model:

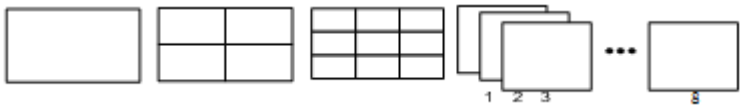
- **1 / 4 / 9 / 16 Division Mode and Auto Sequence Mode**
- **Channel Grouping**
- **1 / 4 / 9 / 16 Multi Spot**
- **TV Out**
- **Menu Controlling in Monitoring Mode**
- **Zoom**
- **Live Event Indication**
- **POS Text Detection**
- **PTZ Screen Control**

5 - 3 - 1 Screen Division and Auto Sequence

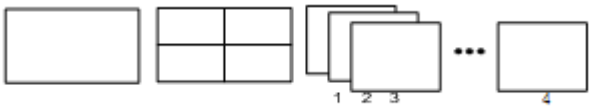
After the system is booted, images will be displayed on a screen divided into [16/9] divisions depending on the model. With the exception of the initial boot, the system will follow the user's screen division setting upon subsequent boots. The division options vary depending on the model.



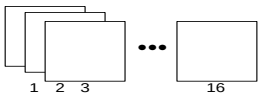
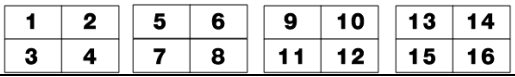
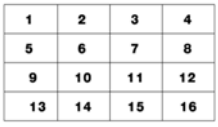
[Figure 5-10. HDRPJ16 / HDRP16 Divisions]



[Figure 5-11. HDRP8 Divisions]



[Figure 5-12. HDRP4 Divisions]

※ While in **Basic Mode** with 1/4/9/16 divisions, pressing the same mode button displays screens as shown below.	
1 Channel Division Mode (16 Groups)	
4 Channel Division Mode (4 Groups)	
9 Channel Division Mode (2 Groups)	
16 Channel Division Mode (1 Group)	

※ The user can view images in full screen by double-clicking a desired channel in 4/9/16 Sub-Screen modes. Double-click any part of the screen to return to the previous mode.

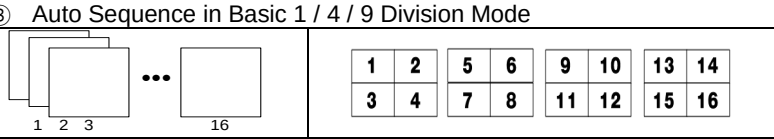
※ Auto Sequence

Auto Sequence is used to rotate images at specified intervals and times in 1/4/9 Basic Division. **Auto Sequence is not available in 16 Basic Division mode**.

① Navigate to **{Menu}** → **{Miscellaneous}** → **{Display Setting}**.

② Pressing {SELECT} on front panel or remote / Arrow Button with mouse initiates Auto Sequence mode.

③ Auto Sequence in Basic 1 / 4 / 9 Division Mode



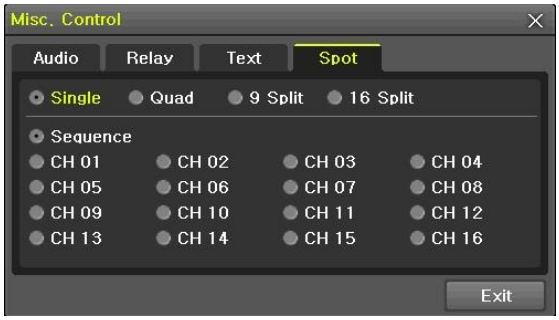
1 Channel Mode Sequence	4 Channel Mode Sequence	9 Channel Mode Sequence

5 - 3 - 2 Spot

The Spot function is used to output a channel that is set with a certain function; Spot has an independent monitor and output. The priority for Spot is Manual Spot > Event Spot > Sequence Spot.

① Manual Spot

The user can designate a spot channel manually.
HDRPJ16 /HDRP16 support 4ea Spot channels, and HDRP8 support 1ea Spot channels.



[Figure 5-13. Spot]

② Navigate to **{Menu}** → **{Miscellaneous}** → **{Misc. Control}** → **{Spot}** and configure as Single mode, Quad mode, Sequence, or Channel.

③ Event Spot

Event Spot enables quickly showing a channel set with the event function when event cases (Sensor, Motion, and Audio) occur. The event check interval is one second. If events are detected in multiple channels, it shows the channel with the last event. Navigate to **{Menu}** → **{Setup}** → **{Recording}** → **{Alarm}** → **{Spot}**.

④ Sequence Spot

The user can select more than one channel in Manual Spot and have sequential images through Spot. Navigate to **{Menu}** → **{Miscellaneous}** → **{Control}** → **{Spot}** → **{Sequence}**.

5 - 3 - 3 Menu in Monitoring Mode

The user can control all functions available in Monitoring Mode via **{Menu}**.

① Press the Menu button or right-click with the mouse. The **{Menu}** will then appear.

② Select the desired item by using the arrow keys or the mouse.

③ Press the ESC button or right-click with the mouse to exit the menu.

5 - 3 - 4 Zoom

Zoom is used to zoom in or out the 1 channel division image in real-time monitoring mode.

④ Navigate to **{Menu}** → **{Zoom}** or click the zoom icon on the control bar in real-time monitoring mode.

⑤ After selecting a channel, it switches to 1 channel division mode and the zoom control screen appears in the bottom-right corner.

[Figure 5-14. Zoom Control Screen]

⑥ Using the mouse, move the cursor to an area to be zoomed in the zoom control screen and double-click on it.

⑦ The Zoom function operates in three levels: Normal, x4, and x16. Those three levels can be switched with the mouse wheel. The user also can left-click and drag the yellow box to move the focused image in higher than the x4 mode.

⑧ Using the remote and front panel, it is possible to change between the three zoom levels:

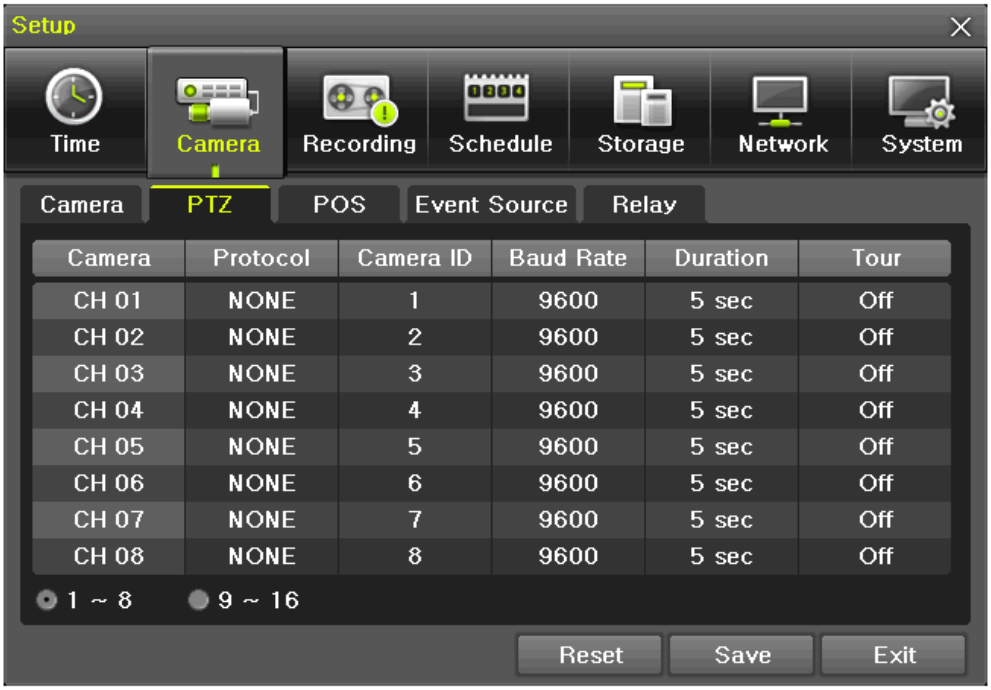
Remote: **{SELECT}** button; the yellow box can be moved by the arrow keys

Front panel: **{SELECT}** button

5 - 3 - 5 Screen Control by using PTZ

The user can monitor in real-time with the PTZ camera.
The PTZ camera must be connected to the system. For external connections, refer to **[2-3 Connection of Other Devices] → [3) Terminal block]**. Navigate to **{Menu} → {Setup} → {Camera} → {PTZ}.**

① Configure Protocol / ID / Baud Rate / Duration / Tour


Setup
Time
Camera
Recording
Schedule
Storage
Network
System
Camera
PTZ
POS
Event Source
Relay
Camera | Protocol | Camera ID | Baud Rate | Duration | Tour
CH 01 | NONE | 1 | 9600 | 5 sec | Off
CH 02 | NONE | 2 | 9600 | 5 sec | Off
CH 03 | NONE | 3 | 9600 | 5 sec | Off
CH 04 | NONE | 4 | 9600 | 5 sec | Off
CH 05 | NONE | 5 | 9600 | 5 sec | Off
CH 06 | NONE | 6 | 9600 | 5 sec | Off
CH 07 | NONE | 7 | 9600 | 5 sec | Off
CH 08 | NONE | 8 | 9600 | 5 sec | Off
1 ~ 8
9 ~ 16
Reset
Save
Exit

[Figure 5-15. PTZ Setup]

※ Baud rate can be selected at 2400/4800/9600/19200/38400.

※ Duration can be selected at 5/10/15/20/User Setting (5-60) seconds.

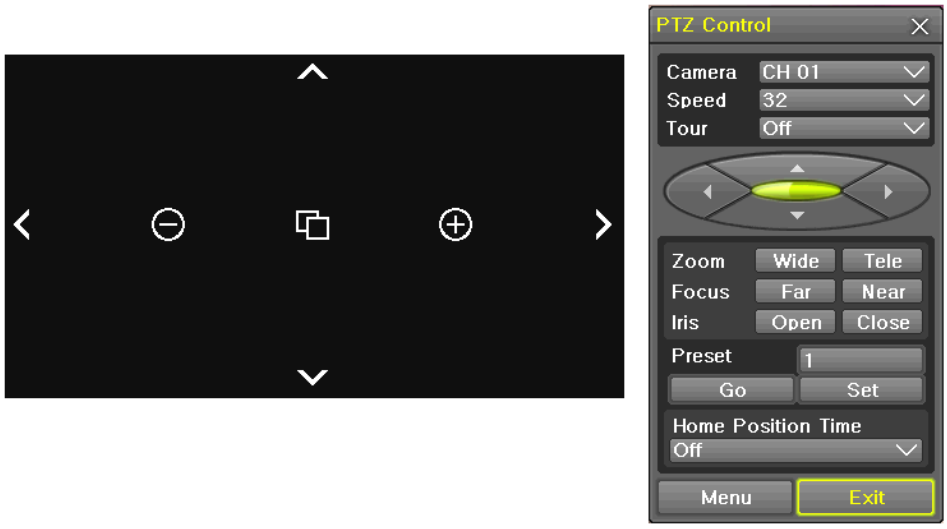
※ Tour consists of Tour 1/Tour 2, and each tour can be set with 8 possible presets.

※ HD-SDI Real-Time Pro DVRs support 28 protocols for PTZ control. For supported protocols, refer to APPENDIX.

---

② To control the PTZ camera, select **{PTZ Control}** in the Menu or press **{PTZ}** on the remote.

[Figure 5-16. PTZ Control]



[Figure 5-17. PTZ Control Mini./Full.]

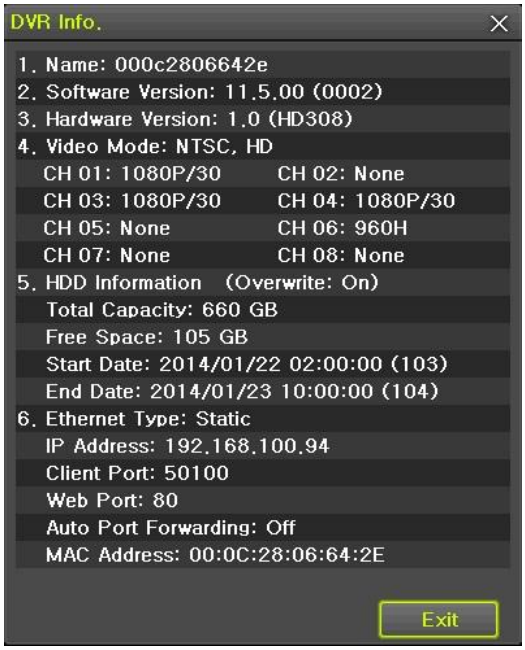
The PTZ can be controlled in "Full" or "Mini" modes. Tour is restricted to [Tour1] and [Tour2]. Home Position Time can be set to 1/5/10/User Setting (1-60) minutes.

	Presets: Using horizontal/vertical/Zoom/Focus/Iris movement of PTZ Camera, zoom, focus, or move iris to a certain spot of the image. By designating these coordinates with a preset the camera can move to the same position later quickly.

	Home Position Time: If enabled and there are no controlling signals sent to PTZ camera after a certain time, the camera will move automatically to the Preset No. 1 position (Preset No. 1 is designated as Home Position).

5-4 System Information and Screen Setup Change

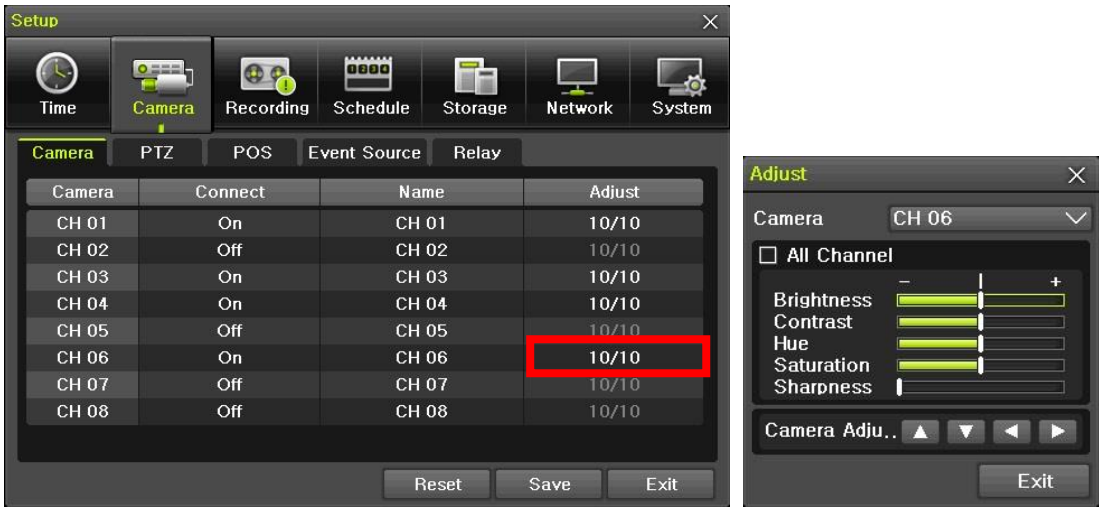
5-4-1 System Information



[Figure 5-18. Product Information Window]

5 - 4 - 2 Screen Brightness/Contrast/Color/Saturation/Sharpen/Camera Adjustment

Select **{Adjust}.** The screen division will change to 1 channel mode and a window will pop up as shown below.

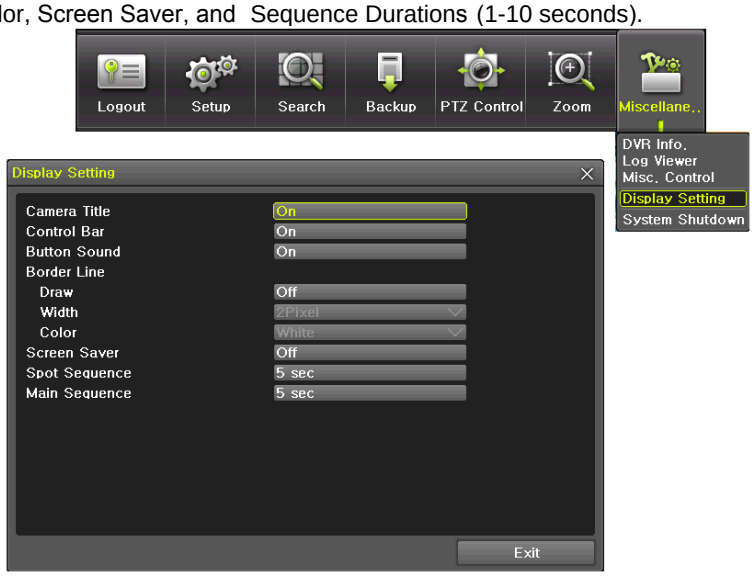


[Figure 5-19. Screen Setup Window]

Moving the camera, down, right, or left excessively may cause black or gray areas to appear on the screen. The level at which such condition does not occur is the proper control range for the camera.

5 - 4 - 3 Display Setting

After selecting Display Setting, the screen division changes to 1 channel mode and a menu pops up as shown below. Options on this screen are: Camera Title On/Off, Control Bar On/Off, Button Sound On/Off, Border Line Draw/Width/Color, Screen Saver, and Sequence Durations (1-10 seconds).



[Figure 5-20. Display Setting Window]

5 - 4 - 4 Screen Saver

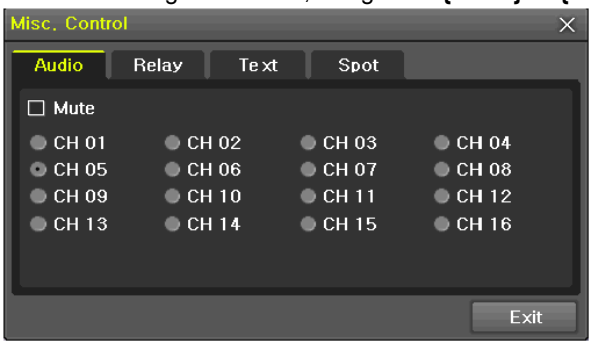
The Monitor connected to the DVR can be shut down to protect the monitor's screen. Navigate to **{Menu} → {Miscellane..} → {Display Setting} → {Screen Saver}**

Name	Function
Duration	Duration of screen saver
Starting	Start of screen saver (0 to 24)
Waiting Time	Activation time for screen saver upon not receiving input

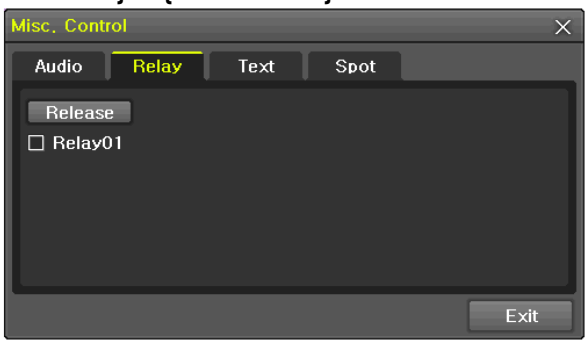
[Figure 5-21. Display Setting Window]

5 - 5 Control

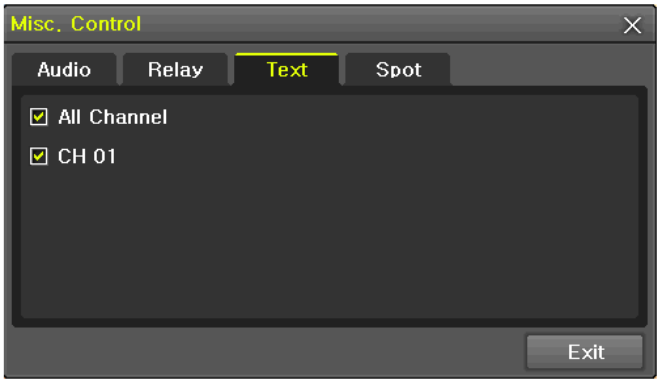
While monitoring in real-time, navigate to **{Menu} → {Miscellaneous} → {Misc. Control}**.



[Figure 5-22. Audio]



[Figure 5-23 . Relay]



[Figure 5-24. Text]

① Navigate to the Audio tab and select the channel to be enabled or muted.

HDRPJ16 / HDRP16 support 16 audio channels, HDRP8 supports 8 audio channels, and HDRP4 supports 4 audio channels.

② Navigate to the Relay tab.

All models support 1 output channel.

③ Navigate to the Text tab.

In regards to ethernet POS, HDRPJ16 / HDRP16 support 8ch POS, HDRP8 supports 4ch POS, and HDRP4 supports 1ch POS. All models support 1ch mode for RS232 POS.

5 - 6 Search

5 - 6 - 1 Search Mode

Navigate to **{Menu}** → **{Search}** in real-time monitoring mode.

[Figure 5-25. Playback Menu]

5 - 6 - 2 Playback Menu

(1) Calendar Search

Calendar Search allows the user to search and playback by [Year/Month/Day/Hour/Minute], [Multi-Channel/ Multi-Time/Multi-Day] and [Motion/Sensor/Audio/Pattern].

(2) Go To The Last

The user can search and playback the last recorded data via Multi-Channel Mode.

(3) Go To The First

The user can search and playback the first recorded data via Multi-Channel Mode.

(4) Go to The Last Played Time

The user can playback from the last played time via Multi-Channel Mode.

(5) Pos Search

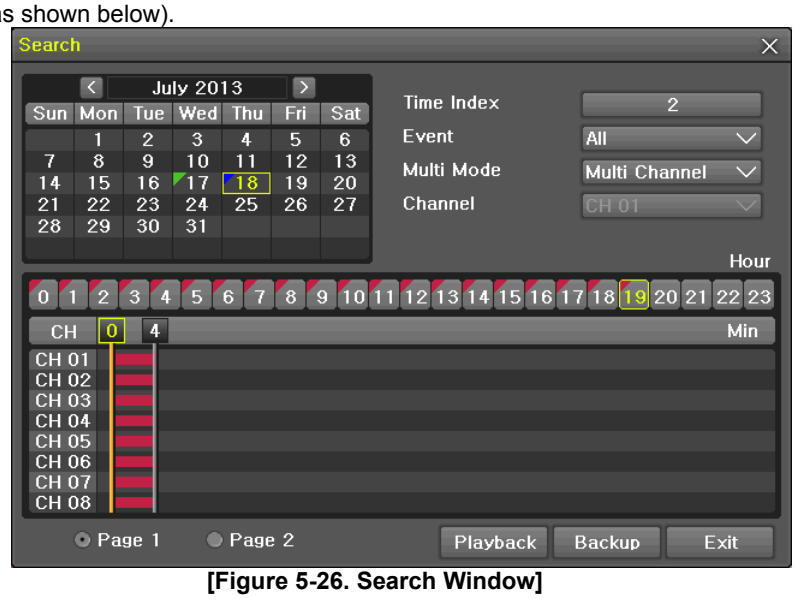
Text Data can be searched and played back by [Year/Month/Day/Hour/Minute] and [Text 1~3]

※ Go To The First and Go To The Last are only available in **{Multi-Channel}**.

5 - 7 Calendar Search

5 - 7 - 1 Search Mode

From the real-time monitoring screen, navigate to {**Menu}** → **{Search}** → **{Calendar Search}**. A search window will appear (as shown below).



[Figure 5-26. Search Window]

5 - 7 - 2 Year/Month/Day Selection

Select the desired [Year/Month/Day]. The color in the top-left square icons in the calendar indicates recording status.

5-7-3 Time Index

① Anytime the user changes the time via **{Menu}** → **{Setup}** → **{Time}** → **{Date and Time}** tab, a new folder (i.e. "index") is created; files saved in the folder before the time change can be found at **{Menu}** → **{Calendar Search}** → **{Time Index}**

② Selecting a file via **{Menu}** → **{Calendar Search}** → **{Time Index}** causes a selection window to appear, and the user can select a file in a different folder (from before the time change).

Start Time	The Recorded Start Time
End Time	The Recorded End Time

5-7-4 Event

Event is used to search the data by events. Select [All/Motion/Sensor/Audio/Pattern/Text].

5-7-5 Multi-Channel Search

Multi-Channel Search is used to play recorded images of multiple channels over a designated time frame.

① Select the desired Year/Month in the calendar window.

② Each channel is then displayed in the hour bar graph.

	The bar graph color in real-time monitoring mode also functionally applies to recording events.

③ Move the timeline to a specific time point using the arrow keys or numeric buttons and press the Search button.

④ The recorded video for each channel will display in the minute bar graph.

⑤ Move the timeline to a specific time point by using the arrow keys or numeric buttons and press the Select button. Playback will then begin as specified.

5-7-6 Multi-Time Search

The user can play back the video contents of a channel recorded in different time zones simultaneously.
Entering search mode within Multi-Time playback leads to Multi-Time Search.

① Date search operates exactly like Multi-Channel Search.

② The hourly recording status of the selected date can be viewed after selecting a desired date.

③ Select the start time and channel by using the arrow keys.

④ The hourly displayed video of the selected channel will then be displayed in the minute bar graph.

⑤ Move the timeline by using the arrow keys and numeric buttons, specify the time, and then press the Start button to begin playback.

※ A different time zone equals 16 hours continuous.

5-7-7 Multi-Day Search

The user can play back the video contents of a channel recorded on different dates simultaneously.
Entering search mode within the Multi-Day playback leads to Multi-Day Search.

① Day search operates exactly like Multi-Channel Search.

② Select the desired date to view the date list and hourly recording status for that selected date.

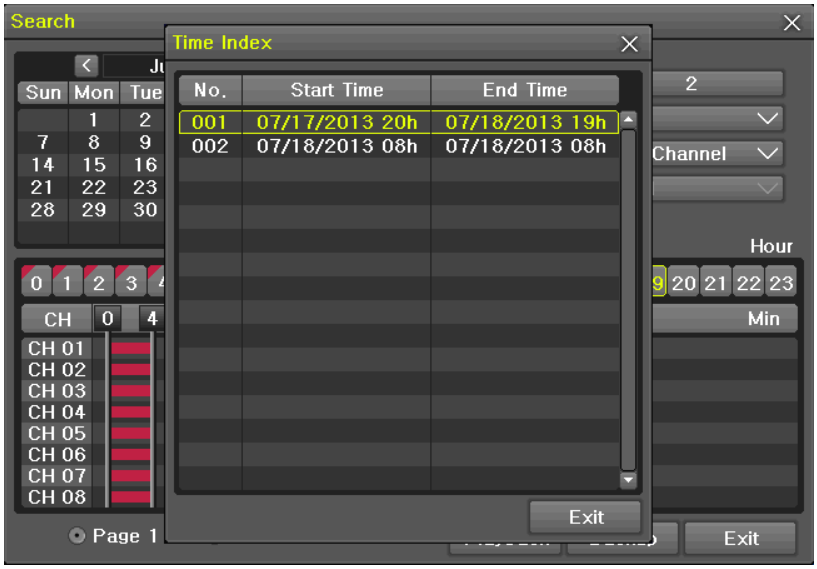
③ Select the start time and channel by using the arrow keys.

④ The recorded video of the selected channel will then be displayed in the minute bar graph.

⑤ Move the timeline by using the arrow keys and numeric buttons, specify the time, and then press the Start button to begin playback.

5 - 7 - 8 List All

The Time index can be checked in the order of the timeline.



[Figure 5-27. Time Index]

5 - 8 POS Search

5 - 8 - 1 POS Search Mode

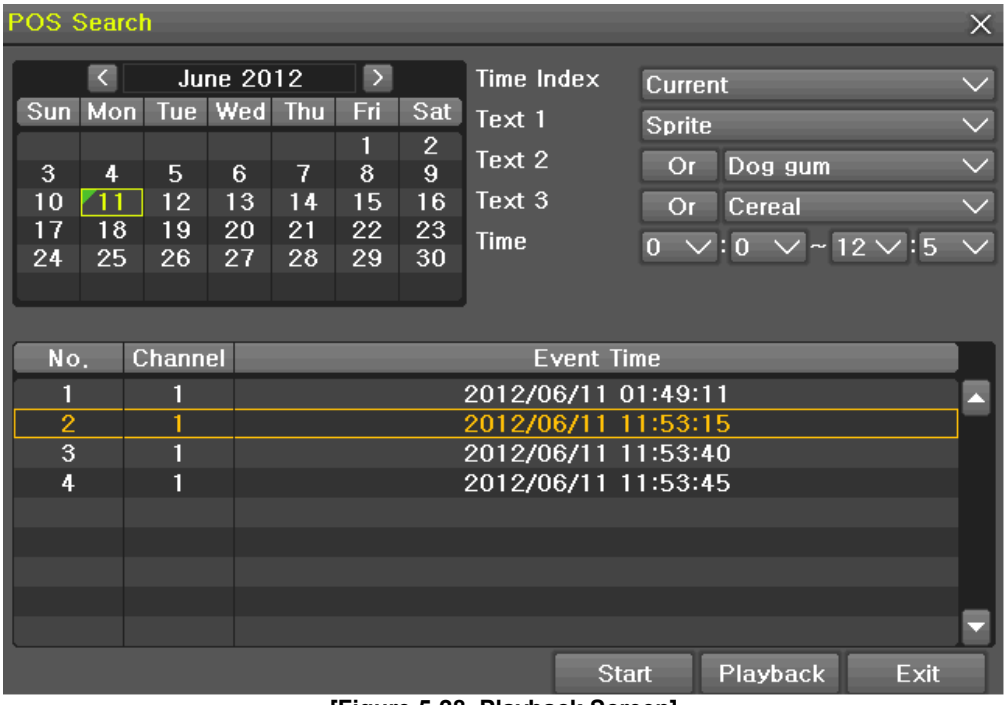
On the real-time monitoring screen, select {**Menu**} → {**Search**} → {**POS Search**}. A search window will appear (as shown below).

5 - 8 - 2 Year/Month/Day/Text/Time Selection

Select date/time, Time index, Text 1~3, and start time for the channel.

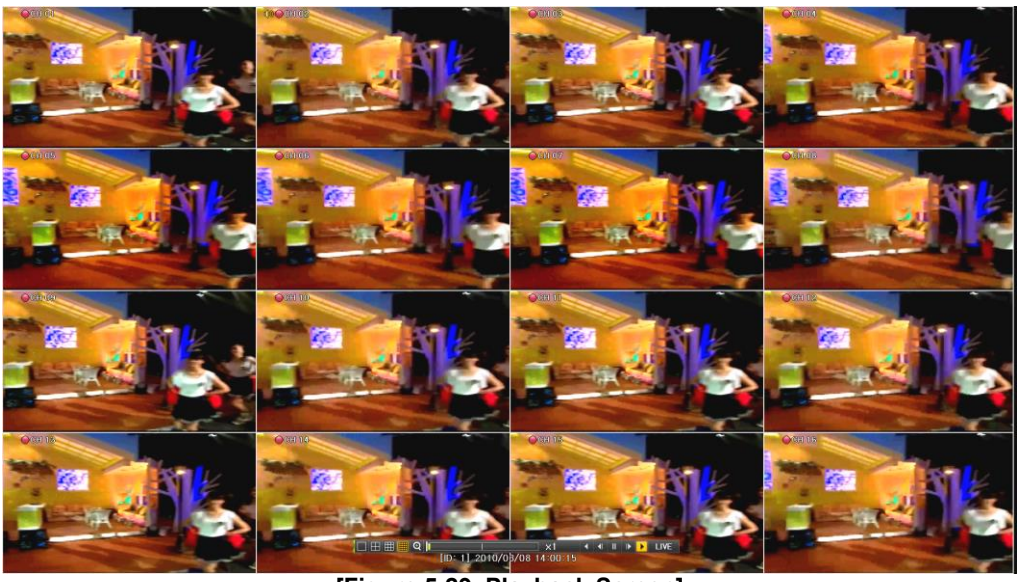
5 - 8 - 3 Search / Playback

Select "Start," then select a searched item in the list. "Playback" can then be selected.



[Figure 5-28. Playback Screen]

5 - 9 Playback



[Figure 5-29. Playback Screen]

※ There are five methods to play recorded images:

- "Calendar Search" Playback
  Select **{Playback}** in **{Menu}** → **{Search}** → **{Calendar Search}** → **{Search}**.
- "Go To The Last" Playback
  Navigate to **{Menu}** → **{Search}** → **{Go to The Last}**.
- "Go To The First" Playback
  Navigate to **{Menu}** → **{Search}** → **{Go To The First}**.
- "Last Played Time" Playback
  Navigate to **{Menu}** → **{Search}** → **{The Last Played Time}**.
- "Log View" Playback
  Navigate to **{Menu}** → **{Miscellaneous}** → **{Log Viewer}**; select the timeline listed to play

※ There are a variety of playback options with the HD-SDI Real-Time Pro DVR's:

- **Smart Search**
- **POS Search**
- **Calendar Search**
- **Multi-Time**
- **Multi-Day**
- **Multi-Channel**
- **Panorama Play**
- **Event Play**
- **Zoom Play**

5 - 9 - 1 Playback and Playback Speed Control

① In Playback mode, the user can play back video contents by using buttons as shown below.

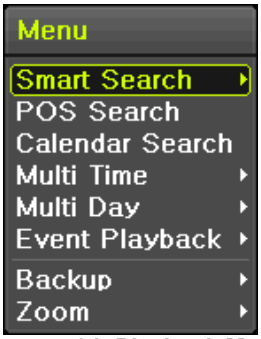
② After the data is played to the end, the data of the next time zone will be automatically searched and played (this function is possible only in Multi-channel Playback mode; both backward and forward playback are possible).

③ Pressing buttons, the user can adjust the playback speed by (x 1) / (x 2) / (x 4) / (x 8) / (x 16) / (x 32) / (x 300).

[Figure 5-30. Playback Status and Control Window]

Description of the Search Buttons		
Button	**Name**	**Features**
	Channel Mode Change	Switch channel mode.
	Zoom Mode	Switch to Zoom mode.
	Forward Play / Fast Forward	Press one time - Playback forward (x 1) Press two times - Fast forward (x 2) Press three times - Fast forward (x 4) Press four times - Fast forward (x 8) Press five times - Fast forward (x 16) Press six times - Fast forward (x 32) Press seven times - Fast forward (x 300) Pressing one more time in x300 switches back to x1.
	Forward Frame by Frame	Pause and Playback frame-by-frame
	Pause	Pause
	Reverse Frame by Frame	Pause and Reverse playback frame-by-frame
	Reverse Play / Fast Reverse	Press one time - Playback reverse (x 1) Press two times - Fast reverse (x 2) Press three times - Fast reverse (x 4) Press four times - Fast reverse (x 8) Press five times - Fast reverse (x 16) Press six times - Fast reverse (x 32) Press seven times - Fast reverse (x 300) Pressing one more time in x300 switches back to x1.
	ESC	Exit Playback Mode.
		Status bar indicating information of hourly recorded image data and speed

Right-click or select menu button in Playback Mode to make the **{Playback Menu}** appear as shown below.



[Figure 5-31. Playback Menu]

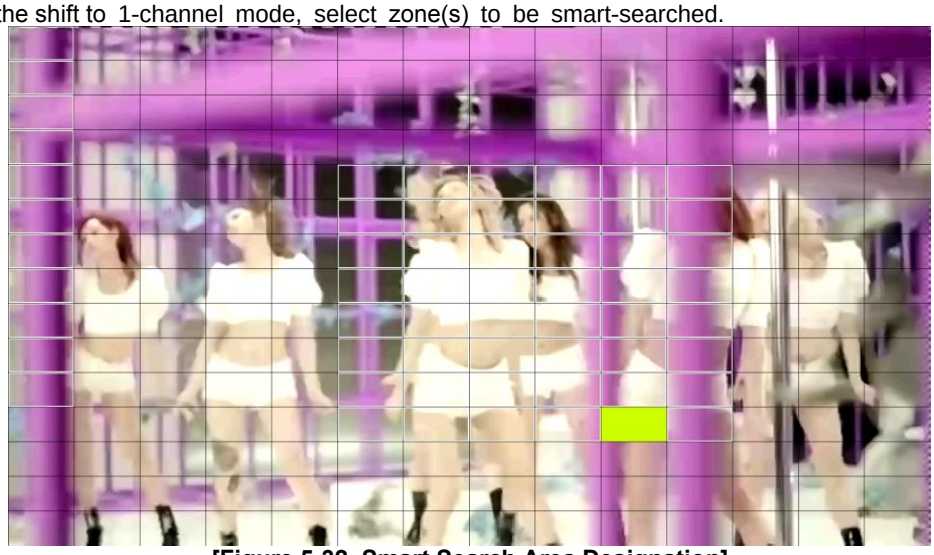
5-9-2 Smart Search

This function can be used to search an image quickly for object movement in a specified zone. Searching can be conducted for each channel, and detailed controls are also available.

Type	Content
Sensitivity	5 levels: Lowest / Low / Middle / High / Highest
Minimum	Mosaic pixel control available between 1- 10
Quick Search	Search up to 30 frames at once
Detail Search	Search all frames.

① Navigate to Smart Search and select the desired channel.

② After the shift to 1-channel mode, select zone(s) to be smart-searched.



[Figure 5-32. Smart Search Area Designation]

③ The 14 x 15 pixel mosaic mode appears. By default, all pixels are selected. Left-click and drag the pixel mosaic pointer (deep-yellow) to select a zone. Additional zones can be selected by repeating this step.

⚠	Motion is detected in non-designated blocks.

④ Right-clicking brings up the menu as shown below. Configure each category as desired and press Playback to begin search.

[Figure 5-33. Smart Search Motion Detection Window]

⑤ The search procress may take some time. Playback can be begin after the search is complete.

5-9-3 POS Search

Recorded Text Data must be searched in order to play it back.

5-9-4 Calendar Search

Navigate to {**Menu**} → {**Search**} → {**Calendar Search**}; a search window will appear.

5-9-5 Multi-Time

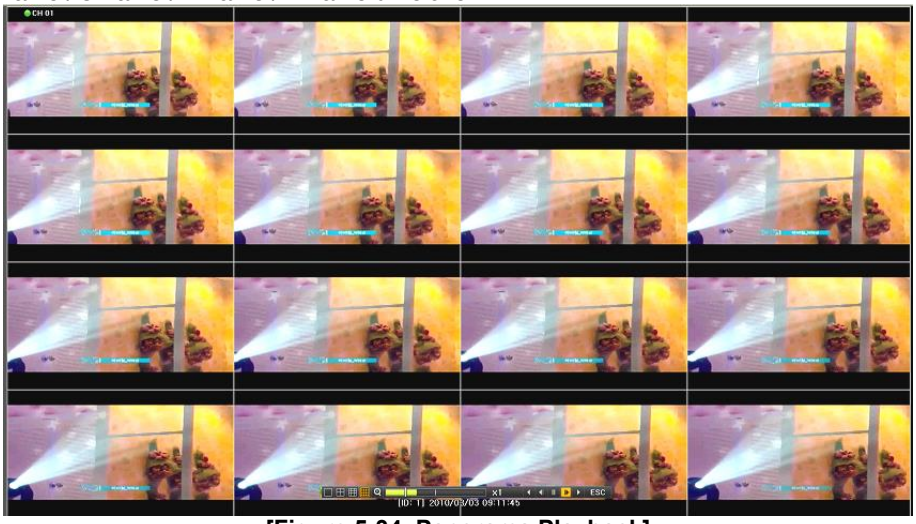
The user can play back the recorded images of a particular channel recorded in different time zones simultaneously. The search results are ordered from past to recent.

5-9-6 Multi-Day

The user can play back the recorded images of a particular channel recorded on different dates simultaneously. The search results are ordered from past to recent.

5-9-7 Multi-Channel
Multi-Channel Search is used to play recorded images of different channels over a designated time frame.

5-9-8 Panorama Play
Panorama Play is used to play recorded images of a particular channel frame-by-frame. Panorama Play can be viewed at 16-frame / 8-frame / 4-frame / 1-frame divisions.



[Figure 5-34. Panorama Playback]

5-9-9 Event
Event is used to search and play back events [All/Motion/Sensor/Audio].

5-9-10 Backup
The user can save a backup of image data and capture the image into [CD/External Device].

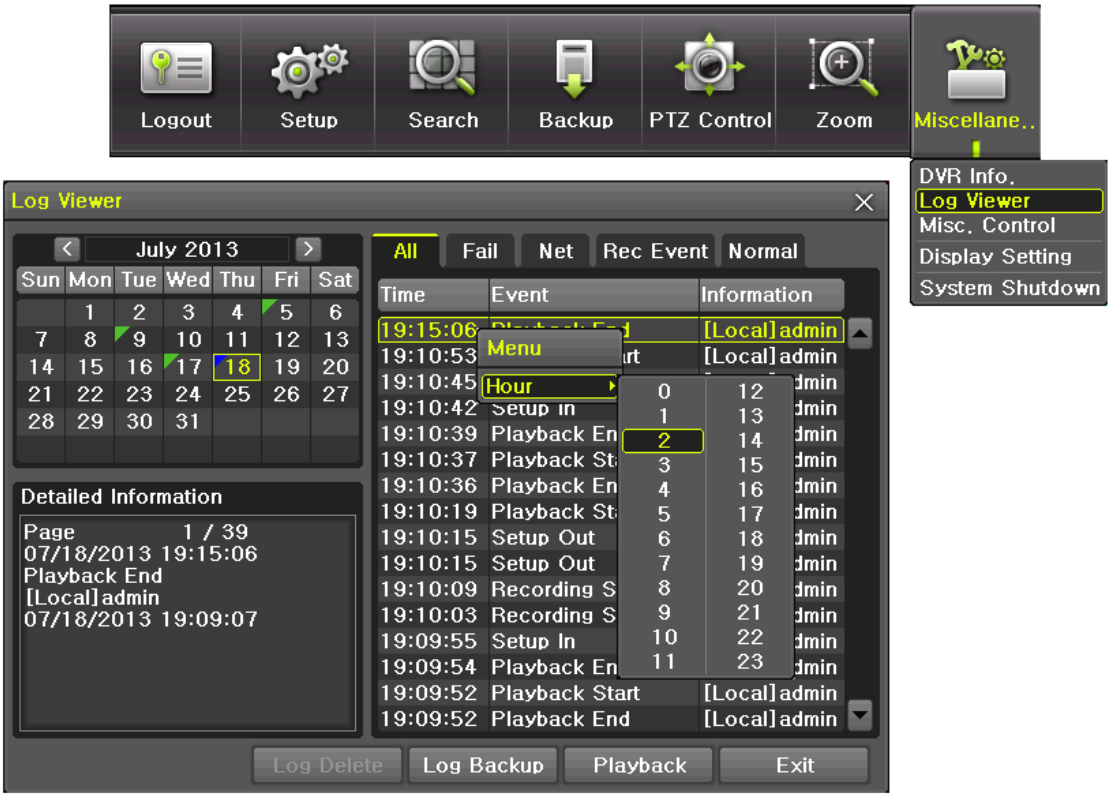
Backup	Save the recorded data into [CD/External Device].
Snapshot	Capture and save the currently displayed screen.

5-9-11 Screen Mode
Screen division is available both in Playback mode and Monitoring Mode. [1 / 4 / 9 / 16 Mode] can be selected.

① Select the screen division mode with the mouse, front panel arrow keys, or remote controller.

[Figure 5-35. Display Mode]

5-10 Log Viewer
The DVR records all log information for the system operation including Power on/off, System Setup and Network Access. Navigate to **{Menu}** → **{Miscellaneous}** → **{Log Viewer}** to see the logs.



[Figure 5-36. Log View]

5-10-1 Log Type

Normal	Logs related to power ON/OFF, file copy/backup failure, setup start/end, playback, and other basic system operations
Recording Event	Logs related to recording including motion, sensor, and audio detection
Network	Logs related to network operations including network login, logout, and live
Fail	Logs related to system operation failures including signal loss and network connection failure
All	Logs related to all system operations

5-10-2 System Log Viewer

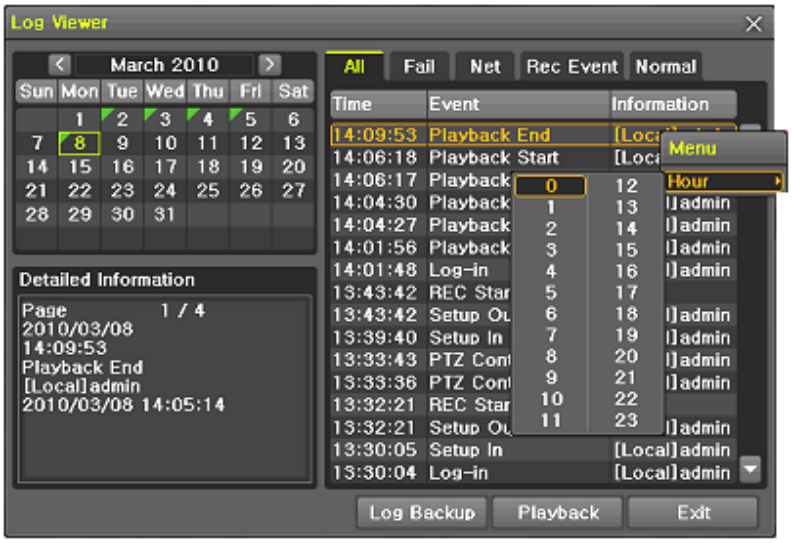
① In real-time monitoring mode, navigate to **{Menu}** → **{Miscellaneous}** → **{Log Viewer}**; Log List Window will appear.

② On the activated calendar window, select the desired date (year/month/day) by using the arrow keys and Select button.

③ The user can check the time and the log type by using the arrow keys in the log list.

④ Use Up/Down buttons to check the logs by time and type on each page.

⑤ The user can shift the focus to a different time zone (playback will begin from the point when logs are saved) by right-clicking or selecting the front panel **{Menu}** button then selecting **{Hour}**.



[Figure 5-37 . Move to the log list of the certain time zone in Log View]

	Changed Time Log Data View The stored data folder is created every time the user changes the time. When time changes are made, a blue triangular icon is displayed on a date in the calendar window. Otherwise, a red triangular icon is displayed on unchanged dates. To view the log details, select the desired date with a red icon. Selecting a date with the blue icon causes the changed date list window to appear.

5-1 1 Recording

5-1 1-1 Recording Types

Various recording types are supported as shown below:

Recording Type	Description
Continuous	Continuous recording will be initiated based on the general frame rate.
Motion	When motion is detected, the recording will be initiated based on the event frame value.
Sensor	When an input signal from an external sensor is generated, the recording will be initiated based on the event frame value.
Audio	When audio is detected, the recording will be initiated based on the event frame value.
Text	When a text is received from a POS device, the text will be recorded.

5-1 1-2 Recording Setup

Navigate to **{Menu} → {Setup} → {Recording}** for the Recording Setup. For more information, navigate to **{Menu} → {Setup} → {Recording} → {Recording}**.

5-1 1-3 Recording Status View

(1) Recording Status Color Designations

※ Recording Event / Recording Mode Icon ※		
Recording Event	M	Motion Detection Recording
	S	Sensor Recording
	A	Audio Recording
	T	Text Recording
Recording Mode	V	Video Recording
	A	Audio Recording
	T	Text Recording

5-12 Backup

In order to backup data, internal or external storage devices (CD, DVD or HDD) must support USB 2.0 connections. For supported external devices, refer to APPENDIX. The user can back up data from real-time monitoring, search, log, or playback modes.

5-12-1 Backup in Real-Time Monitoring Mode

① In real-time monitoring mode, navigate to **{Menu}** → **{Backup}** → **{Backup}**. The backup menu will appear.

② The automatic backup is set to 5 minutes when the Copy (Backup) button is pressed; the start time being 5 minutes *prior* to when the button was pressed, and the end time being *at* the time it was pressed.

③ All channels containing data at the time of backup are backed up automatically. Depending on the divided screen mode however, only the viewable channels can be selected.

④ For remaining backup procedures, see **[5-33 Common Backup Procedure]**.

5-12-2 Backup in Search Mode

① Navigate to **{Menu}** → **{Search}** → **{Calendar Search}**.

② Right-click or select front panel **{MENU}** button.

③ The automatic backup start time is set to the year/month/date/hour/minute set in the search mode; the end time to the last minute/second of the data existing at the selected time.

④ All channels containing data at the time of backup are backed up automatically.

⑤ For remaining backup procedures, see **[5-33 Common Backup Procedure]**.

5-12-3 Backup in Log Mode

① Select a date in **{Menu}** → **{Miscellaneous}** → **{Log Viewer}** then select a log related to the data to be backed up

② Right-click or select front panel **{MENU}** button.

③ The automatic backup start time is set to 5 minutes prior to the generation of the selected log; the end time being *at* the time it was generated.

④ All channels containing data at the time of backup are backed up automatically. If a log has been generated for only one channel however, then only that channel is included in the backup.

⑤ For the remaining backup procedures, see **[5-33 Common Backup Procedure]**.

5-12-4 Backup in Playback Mode

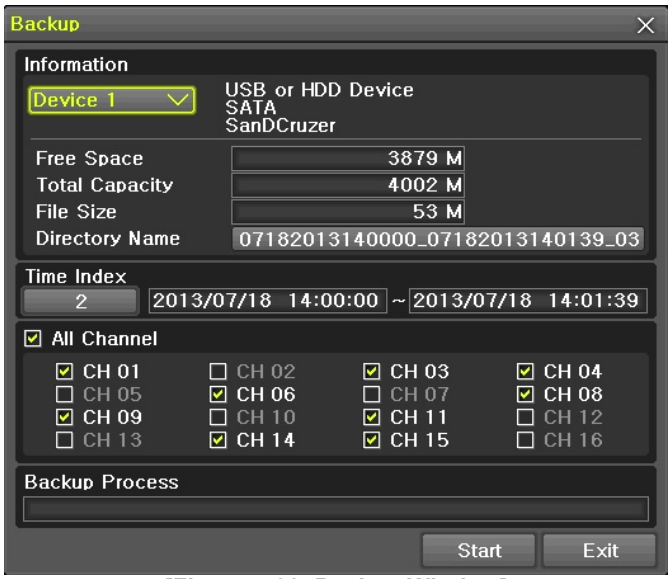
① In Playback mode, navigate to **{Menu}** → **{Backup}**. If playback is in progress at this time, it will stop.

② The automatic backup is set to 5 minutes when the Copy (Backup) button is pressed; the start time being 5 minutes *prior* to when the button was pressed, and the end time being *at* the time it was pressed.

③ All channels containing data at the time of backup are backed up automatically. Depending on the divided screen mode however, only the viewable channels can be selected.

④ For the remaining backup procedures, see **[5-33 Common Backup Procedure]**.

5-1 2-5 Common Backup Procedure



[Figure 5-38. Backup Window]

① **[Figure 5-38]** shows the backup window menu.

② Underneath "Information," available devices can be selected from the drop-down list.

③ Upon selecting a device from the list, its free space and total capacity will be displayed underneath.

④ Selecting a device additionally creates a directory name based on the initial values for the time and channel to be displayed and the size of the file to be backed up to be calculated.

⑤ The backup time dictates what the directory is to be named. The first 12 digits are determined by the year/month/day/hour/minute/second of the start time; the 12 digits in the middle by the year/month/day/hour/minute/second for the end time. The last 2 digits refer to the number of folders on the selected device.

⑥ The backup time can be set manually upon selecting a device. As a rule, the start time cannot be later than the end time, and the end time cannot be earlier than the start time.

⑦ To change the start and end time, press the Select button after choosing the start and end time. Change year/month/day/hour/minute/second by using the arrow keys, then press the ESC button.

⑧ Changing the backup time causes the name of the directory to be backed up to be changed.

⑨ If the file to be backed up exceed's the free space on the device, its size will be displayed in either a yellow or red box. Yellow meaning that it is capable of rerecording; red, if it isn't capable.

	If the backup storage device isn't formatted and the box displaying the file size is in yellow, executing the backup by pressing the Copy (Backup) button will make a prompt appear asking (Yes/No) if the device should be erased. Selecting **{Yes}** will erase the storage medium for the selected device.

⑩ Press the Copy (Backup) button. A prompt will appear to ask whether the backup should proceed or not.

※ Select **[Yes]** to back up the data or **[No]** to stop the backup. Otherwise, press the **[Cancel]** button to return to the device selection mode in the backup window.

⑪ Select **{Yes}** to continue the backup.

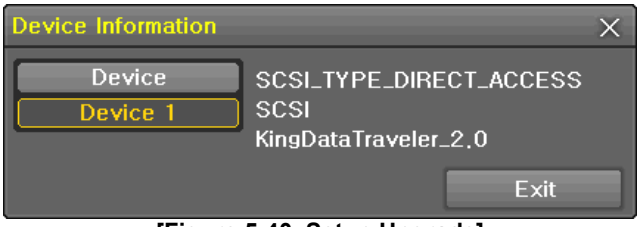
5-1 3 Setup Backup

The Setup Backup is used to back up all current menu setup values. This function enables the user to copy the setup values and apply them to other devices.

[Figure 5-39. Backup and Sub-menu Setup Backup]

① A backup device must be connected for Setup Backup.

② Navigate to **{Menu}** → **{Backup}** → **{Setup Backup}**; the window shown below will appear. The backup name is generated as shown below.



[Figure 5-40. Setup Upgrade]

Explanation of backup name generation:
HD116T_565645348945_80_01_20100303_113237.bin
① ② ③ ④ ⑤
①Model ② DVR name ③ Version ④ Date ⑤ Time

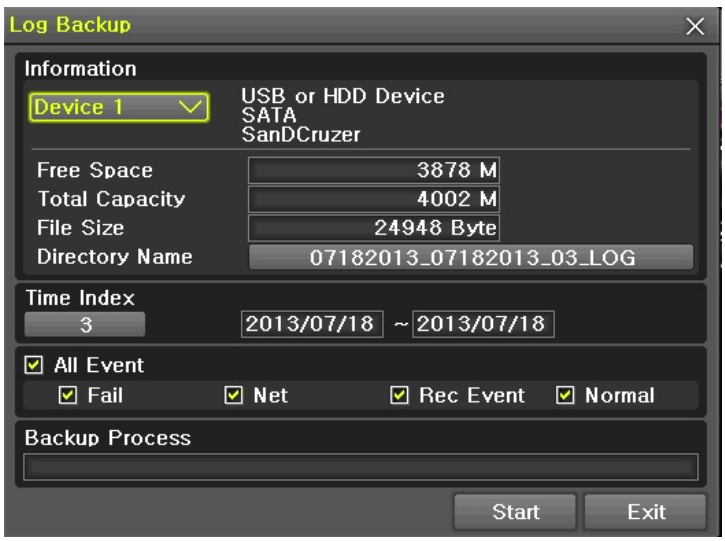
③ Navigate to **{Menu}** → **{Setup}** → **{System}** → **{Upgrade}** → **{Setup}** after inserting the backup device.

④ This method allows the user to upgrade a new device with the current setup values easily.

5-1 4 Log Backup

Back up logs including General / Recording Event / Network / Fail using Log Backup.

① Navigate to **{Menu}** → **{Backup}** → **{Log backup}** and start the backup process after selection of the desired events.



[Figure 5-41. Log Backup]

.Log files are created in a folder as shown below:
20100303_20100303_02_LOG
565645348945_20100303.log
The .log file is a text file which can be opened with text editors, such as MS Notepad.

5-15 Capture

The Capture function allows the user to create a JPG file in real-time monitoring, playback, search, or log modes and back up the image data.

① To back up the currently displayed image, navigate to **{Menu}** → **{Backup}** → **{Capture}** in real-time monitoring, Playback or Log modes.

② When only one USB 2.0 backup device (excluding ODD devices) is searched, the JPG file is stored in the same device.

③ If there are two or more USB 2.0 storage devices (excluding ODD devices), a window for selecting the desired device will be displayed.

④ If the selected device is an ODD device, a prompt asking whether to back up to the ODD device will appear.

Chapter 6. Setup

6 - 1 Time

※ Function Description

1. Time Synchronization

1) Synchronization with the NTP server

The time is synchronized once every hour with the NTP Server.

A. Automatic Setup

The nearest server from the user's zone will be selected for connection. If the connection fails, the next nearest server will be chosen.

B. User Setting

The user sets the URL or IP for the NTP server. If connection is not established, a message will be sent to the user, and the related log will be saved.

If synchronization with NTP server fails, synchronization with RTC will be established.

2) Synchronization with the DVR Time Server

The DTS server is executed in the **DVR system** and the time is synchronized every hour. DTS clients of DVR series referring to the DTS synchronize the time of the DVR system with DTS.

When the DTS time or a zone is changed, the change is reflected on DVR systems belonging to the network (the synchronization signals are broadcasted without passing through the router or gateway). The DVR time server does not support automatic connection.

2. Daylight Saving Time (DST) Setup

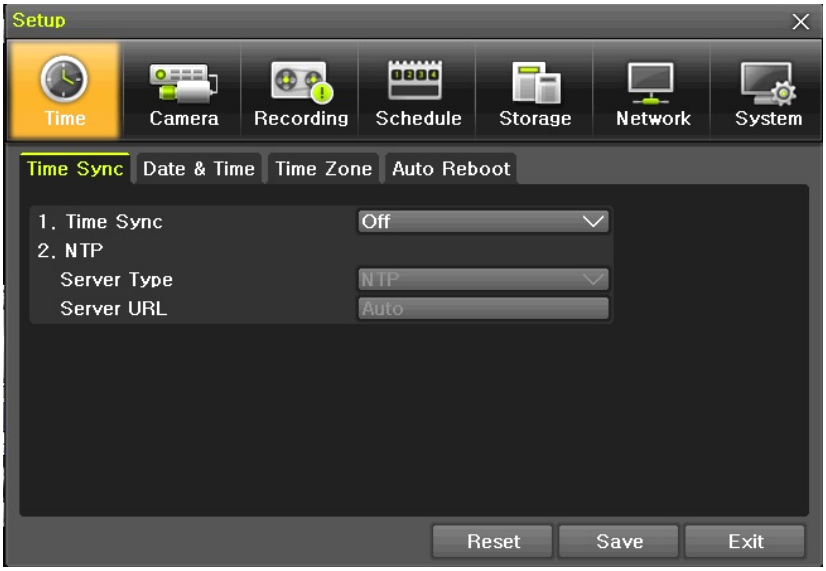
Regardless of to whether NTP server or DST server is referred, DST is automatically processed according to the time.

3. Time Setup by User

The user can set the time directly.

For the NTP client setup, the user can read the time but not change it.

※ Navigate to **{Menu}** → **{Setup}** → **{Time}** to set up time functions.



[Figure 6-42. Setup / Time Menu]

6 - 1 - 1 Time Sync

① Select Time Sever / Sever Type / Sever URL.

Off	The time server is not used.
NTP	NTP is used to set the time for the DVR.

{NTP} setup is available when **{Time Sync}** is set as **NTP**.
The user can enter the IP only when the server type is DVR. For the NTP server, Automatic, IP, or URL should be selected.

6 - 1 - 2 Date and Time

(1) Date and Time

Only available when Time Server is off.

The system date and time format is Year/Month/Day Hour/Minute/Second.

① By using the arrow keys and the Select button, move the focus onto the desired field: Year/ Month/Day/Hour/Minute/Second and press the Select button.

② Select a field you want to change using the arrow buttons, then press the Select button again.

(2)Time Display Format

Select Time Display Format among [Day/Month/Year] / [Month/Day/Year] / [Year/Month/Day].

6 - 1 - 3 Standard Time Zone

(1) Standard Time Zone

① Select {Standard Time Zone}.

② In the selection window, select the desired standard time zone.

(2) DST

① By using the arrow keys and the Select button, select {Summer Time}.

② In the selection window, select On/Off.

(3) Start Time

① By using the arrow keys and the Select button, select {Start Time}.

② In the selection window, set up Start Time.

(4) End Time

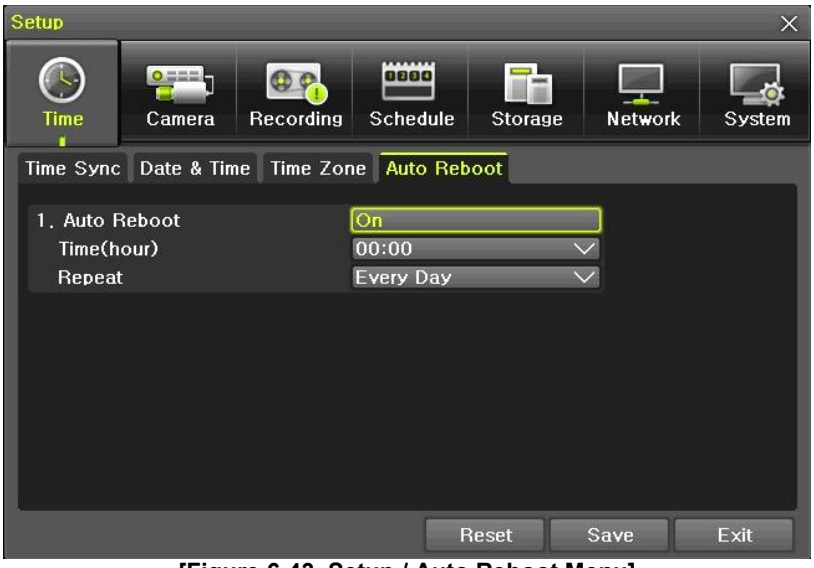
① By using the arrow keys and the Select button, select {End Time}.

② In the selection window, set up End Time

	※ For a weekly setting in the **{Start Time}** and **{End Time}** fields, set Day to 0. ※ After the Daylight Saving Time is selected, the existing data will be displayed as “OLD_” in the search and log list.

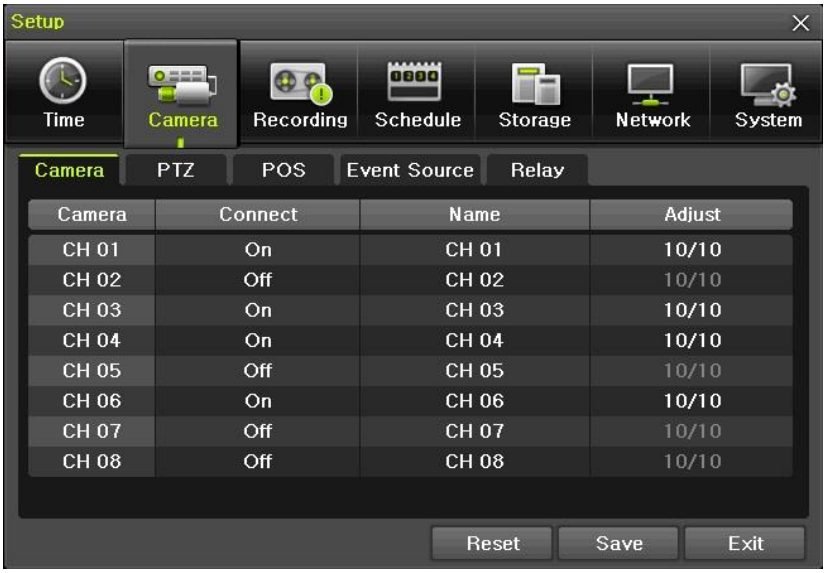
6 - 1 - 4 Auto Reboot

Auto Reboot is intended for use in maintaining system stability, rebooting itself regularly.



[Figure 6-43. Setup / Auto Reboot Menu]

6 - 2 Camera



[Figure 6-44. Setup / Camera Menu]

6 - 2 - 1 Camera

① Connect

Used to set whether to connect or disconnect each camera channel.

※ When the camera channel is set to disconnected, the video contents will not be displayed even if the camera is connected physically still.

② Title

Name each camera. Max. 20 digits are available.

③ Adjust

Adjust Brightness/Contrast/Color/Saturation/Sharpen/Camera.

6 - 2 - 2 PTZ

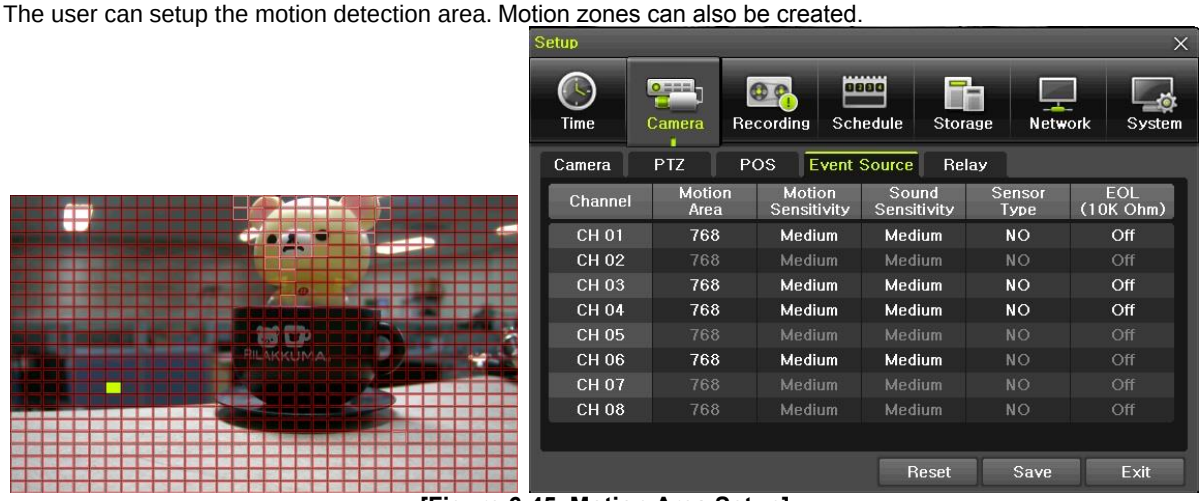
Set up the protocol and baud rate of the PTZ Camera.

6-2-3 POS
Set up the protocol and baud rate of the POS device.

6-2-4 Event Source
Navigate to **{Menu} → {Setup} → {Camera} → {Event Source}**.

(1) Motion Area

The user can setup the motion detection area. Motion zones can also be created.



[Figure 6-45. Motion Area Setup]

① Select Motion Area of each channel.

② The view changes to 1-channel division mode, and rectangular boxes appear where motion may occur. Drag the yellow pixel cursor with the mouse, front panel, or remote controller, and select pixels where motion detection doesn't apply. The selected area will turn brown.

③ Select Exit to finish.

(2) Motion Sensitivity : Lowest/Low/Middle/High/Highest.

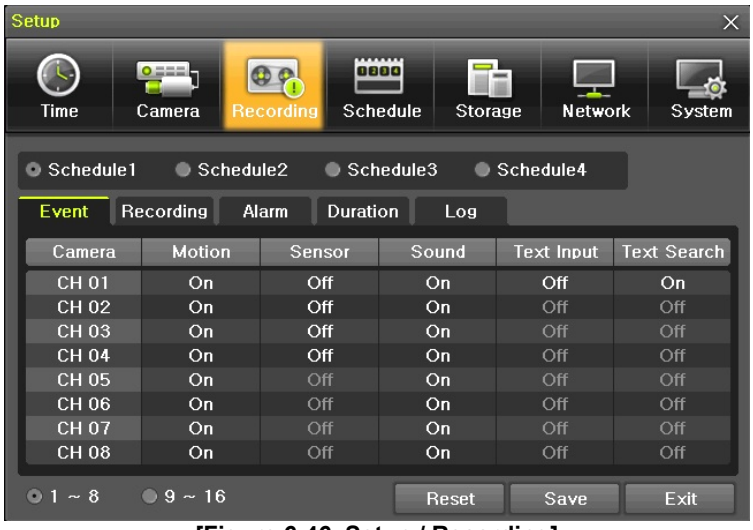
(3) Sound Sensitivity : Lowest/Low/Middle/High/Highest

(4) Sensor Type : Select the sensor type.

(5) EOL : Select EOL functionality (On / Off).

6-2-5 Relay
Select the relay type.

6-3 Recording
Main setup is used to configure the environment of recording, the system, and its major functions. In real-time monitoring, move to **{Menu} → {Setup} → {Recording}**.



[Figure 6-46. Setup / Recording]

6 - 3 - 1 Schedule Selection (Schedule1 ~ Schedule4)

① Each channel can be given 4 different recording schedules.

6 - 3 - 2 Event

Motion / Sensor / Sound / Text Input / Text Search events can be set to On/Off in this menu.

Recording Type	Description
Continuous	Continuous recording based on the Normal Speed frame rate.
Motion	When motion is detected, recording will be initiated based on the event frame rate.
Sensor	When input signal from an external sensor is generated, recording will be initiated based on the event frame value.
Sound	When audio is detected, recording will be initiated based on the event frame value.
Text Input	When a text is received from POS device, recording will be initiated based on the event frame value.
Text Search	All text search results will be sent to a specified email address with details.

6 - 3 - 3 Recording

(1) Recording Resolution

Set the resolution of the channel for recording.

	Input Camera Type		
Resolution	**1080P**	**720P**	**960H**
CIF	-	-	352 x 240
D1	-	-	704 x 480
960H	-	-	944 x 480
720P	1280 x 720	1280 x 720	-
1080P	1920 x 1080	-	-

(2) Recording Quality

Set the quality of the recorded video. Select among 5 levels: **{Lowest}** / **{Low}** / **{Middle}** / **{High}** / **{Highest}**.

※ The higher picture quality, the bigger the file size.

(3) Frame Rate

If the user configures Normal Speed and Event Speed at the same time, the continuous recording will be set to Normal Speed frame rate, and the event recording will be set to Event Speed frame rate.

Normal Speed	Set the recording frame rate for Continuous recording.
Event Speed	Set the recording frame rate for Motion, Sensor, Audio, Text

Resolution / Model	Maximum Recording Frame by Resolution				
	1080P	**720P**	**CIF**	**D1**	**960H**
16CH	480	480	480	480	960
8CH	240	240	240	240	480
4CH	120	120	120	120	240

(4) Audio

Set the recording of the external audio input linked to the system.

6-3-4 Alarm

※ This function is used to generate alarms via Buzzer / PTZ Preset / E-mail / Relay / Spot / Popup when an event occurs. PTZ presets can be configured between 1-16.

※ The popup function causes a warning window to appear in real-time monitoring mode, giving the user details of the event.

6-3-5 Duration

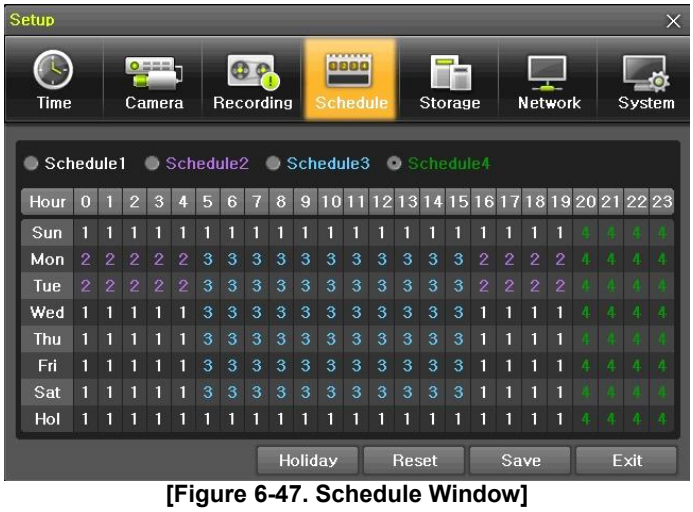
Set up Pre-Recording (ON / OFF) and Post-Recording (5 / 10 / 15 / 20 / 60 / 150 / 300 seconds).
※ In Pre-Recording, images of the last 7 seconds before the event occurrence are recorded.

6-3-6 Log

Set up On / Off for Motion / Sensor / Sound / Text Input.

6-4 Schedule

HD-SDI Real-Time Pro DVR's provide 4 different recording mode configurations. Each schedule mode can be set one week/24 hours, and the recording follows the setting automatically.



[Figure 6-47. Schedule Window]

6-4-1 Schedule Setup

Select one schedule among Schedule1, Schedule2, Schedule3 and Schedule4.

(1) Selection Tips

① Select the day and time to be set by using the arrow keys.
② The user can configure a whole line at once by moving the cursor onto Time (0-23) or Day (Sun.-Holiday) and selecting.
③ Using the mouse may be easier when making these changes.

(2) Holiday Registration

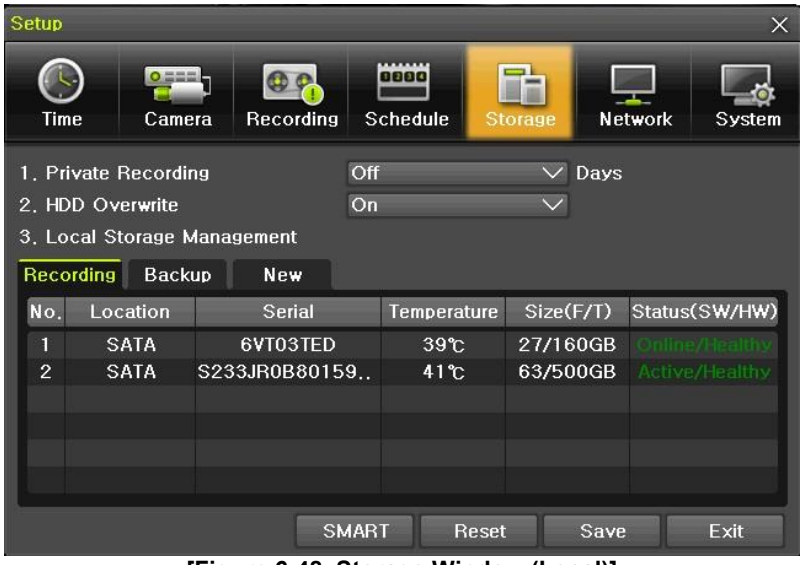
This feature enables the user to set the holidays and schedule independently.

① Move to **{Schedule}** → **{Holiday}**.

	※ If the date for the holiday and day of the week are the same in the **{Schedule}** menu, the holiday setup will have priority over the date setup. ※ Designated holidays are marked with a red tag.

② On the Holiday Registration Window, select the date by using the arrow keys and the Select button.
③ After setting the holiday, select **{Save}** at the bottom of the menu.

6 - 5 Storage



[Figure 6-48. Storage Window (Local)]

	To apply new settings in the Storage menu, be sure to save the setting after making changes. **Reset** initializes the menu to its basic settings.

6 - 5 - 1 Max. Recording Days

Recording days can be limited with this function: None/1day/7days/30days/User setting(1-31).

6 - 5 - 2 HDD Overwrite

① Select On/Off for HDD Overwrite.

On	If the HDD runs out of disk space, the existing files will be overwritten starting with the oldest.
Off	If the HDD runs out of disk space, recording to the disk will be halted.

6 - 5 - 3 Local Storage Management

(1) Local Storage Management Function

Local Storage refers to the internal hard disk and storages connected to the system via USB. Local Storage is classified and managed as **{Recording}, {Backup}**, **{New}, {iSCSI}** and functions are described below:

① **Recording**

The Recording storage is managed directly; it stores data on the hard disk in real time. Five commands can be executed, but depending on the S/W status however, some commands cannot be executed.

New	Returns the status of the selected storage device to New; if this command is executed, the selected storage device will be moved to the **{New}** storage device manager.

	※ Physical states supporting the execution of the commands above includes Healthy and Warning. In Fault state, however, no command can be executed.

② **Backup**

The Backup storage is managed in Backup. Backup storages are not used to store data; rather, they are only used to back up data. The user can execute only the **{New}** command.

Depending on the storage type of the device, the storage can be used only for (Recording) or (Backup) purposes.

③ **New**

All forms of storage initially detected are displayed and managed in **{New}**. They can be changed into Recording storage or Backup Storage.

Recording-Format	Changes the selected device into dedicated storage for recording
Backup-Format	Changes the selected device into a backup storage device

Caution

In **{New}**, at least one storage device should be selected as dedicated storage. Otherwise, recorded data cannot be stored in real-time.

(2)Composition of the local storage device

	※ There are three software status types:
Active	Connected to storage or backup device / currently saving data
Online	Only connected to storage or backup device
Offline	Not connected to storage or backup device

	※ There are three hardware status types:
Healthy	Connected to storage or backup device / functioning normally
Warning	Connected to storage or backup device, but error was detected; data storage and/ or backup cannot occur (for more information, see description below).
Fault	Not connected to storage or backup device / can neither save data nor perform backup

1. **Fault State** : The storage device is damaged, and none of the S/W operations can be performed. The fault state is not related to a DVR problem. The DVR has detected the fault and stopped the recording.
2. **Warning State** : The storage device has a physical error that can be corrected by the storage device or by the DVR. If the error is not corrected however, the storage device is likely to be damaged (and will shift to fault state). Backing up data in the corresponding storage device and replacing the device with a working one are strongly recommended.
3. If there is an active storage device with a warning or a fault, a message is displayed in the upper-left of the screen.

※ **Selecting {Recording-Format} or {Backup-Format} causes all data in the device to be erased. Use caution when preforming this task.**

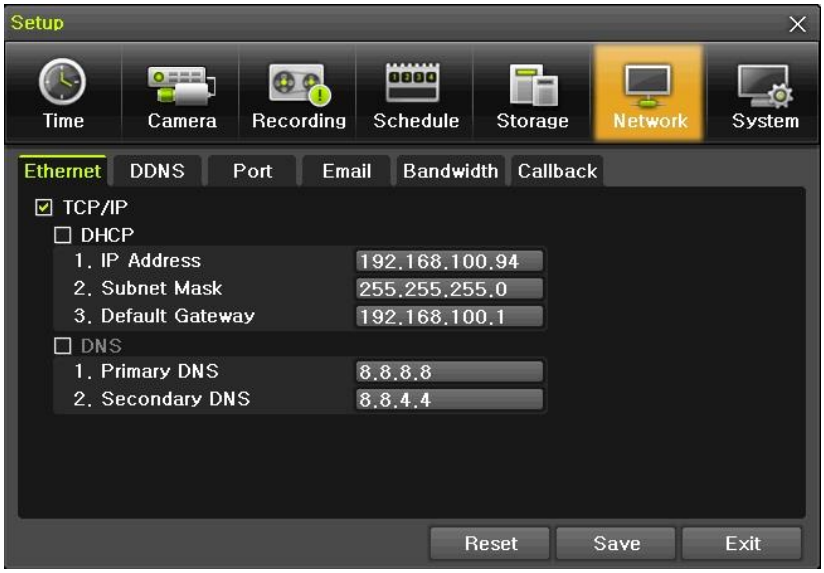
※ **While {Recording-Format} or {Backup-Format} is being set up, do not remove the device (may cause an error when detecting the device).**

Caution

※ **To use external or portable storage device for system upgrade, set to {Backup-Init} in the {New} item for {Main Setup} → {Storage Device} → {Local Storage Device Management}.**

※ **When used in the DVR for the first time, a backup USB device will always be detected in the {New} category. Therefore, to use the USB device for backup, it must be set up as {Backup-Format} in the {New} category first. A USB device that has previously gone through this procedure will be detected automatically in the {Backup} category upon later reconnection.**

6 - 6 Network



[Figure 6-49. Setup Network Window]

6 - 6 - 1 Ethernet

(1) TCP/IP

To use a fixed IP in the Local Area Network (LAN) environment:

① Select **{Ethernet}** in **{Menu} → {Setup} → {Network}**

② Select "TCP/IP"

③ Save after filling in IP Address, Subnet Mask, Default Gateway, Primary DNS, and Secondary DNS

6 - 6 - 2 DDNS

As part of the DNS system, the Dynamic Domain Name System (DDNS) service updates IP addresses of the host name in real-time and allocates fixed domain names to systems linked to dynamic IP addresses to allow users to use the same DNS name regardless of the change of the IP address.
A dynamic DNS is provided to ensure URL access in a dynamic IP environment.
User can monitor remotely via the Internet with web server functions equipped in the DVR.

① Select On/Off for DDNS or set a domain name to use with the arrow keys and selection button.

② With DDNS On, enter the host name (using 4-20 digits) and save it; the registration procedure for the host name will proceed automatically.

③ The host name to enter cannot be pre-registered in DDNS sever. Otherwise the procedure won't work.

④ The basic host name is the MAC address of the DVR.

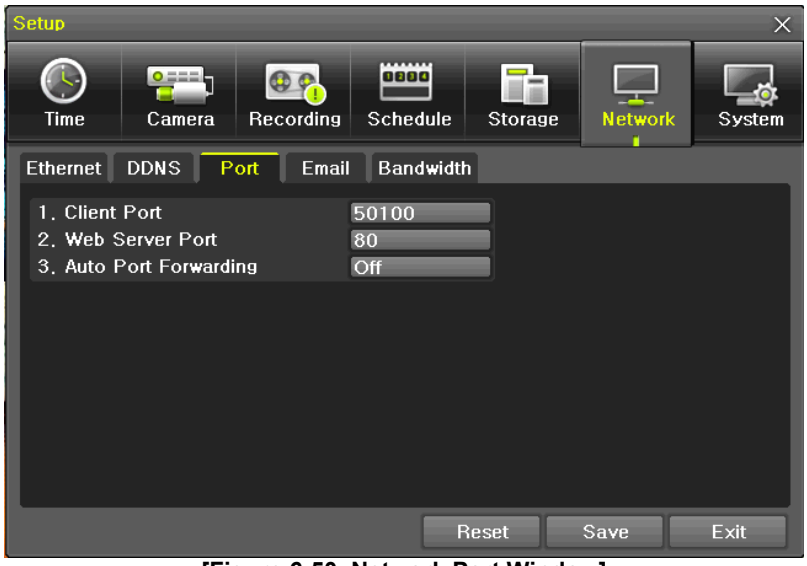
⑤ If the entered host name begins with "000c28," none of the MAC addresses, save the current DVR, will work.

⑥ With DynDNS On, enter the host name, user name registered in DynDNS, and password; then save.

	※ Access DynDDNS server (http://www.dyndns.org), apply for a user account, and then register the domain name to use and enter URL. ※ More information regarding this procedure can be found at this site.

6 - 6 - 3 Port

Navigate to **{Menu}** → **{Setup}** → **{Network}** → **{Port}**.
This feature is used to set up the network port.
The default value is 50100; a randomly chosen value can be used depending on the network environment. The Web Server Port is used to connect the DVR for remote monitoring. The Web Port Default is 80, but can be set between 2000 ~ 65527.



[Figure 6-50. Network Port Window]

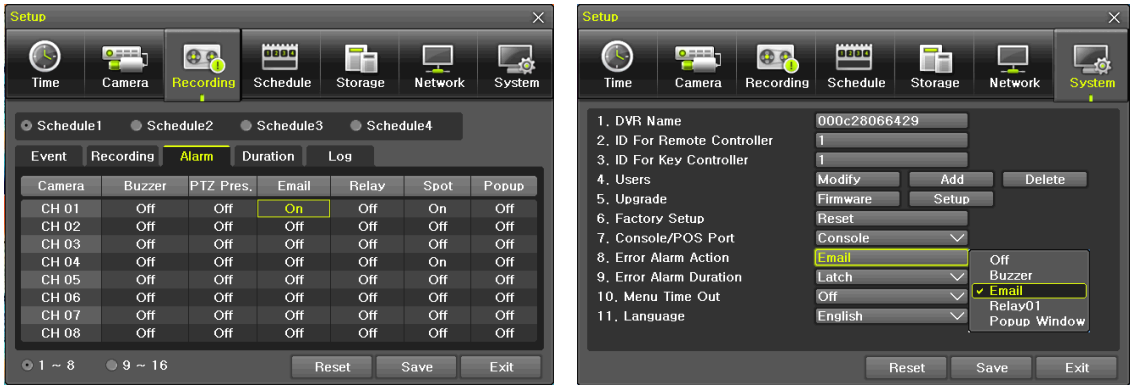
6 - 6 - 4 E-mail

① Navigate to **{Menu}** → **{Setup}** → **{Network}** → **{E-mail}**. To use the e-mail function, DNS or sub-DNS in **{Menu}** → **{Setup}** → **{Network}** → **{Ethernet}** needs to be configured.

[Figure 6-51. Setup Network Ethernet Window]

[Figure 6-52. Setup Network E-Mail Window 1]

To set automatic E-mail transmission service when an event occurs:
Configure **{E-mail}** in **{Menu}** → **{Setup}** → **{System}** → **{Alarm}** or **{E-mail}** in **{Menu}** → **{Setup}** → **{Action}** → **{Alarm}**.



[Figure 6-53. Setup Network E-Mail Window 2]

② Relay SMTP is set to 'Gmail' as default, but when "Default" (in menu tab) is selected, this will change the email address to dvr@cctvuser.com.

③ Receiver Email can be set up to 5 users (email addresses).

④ Email Interval can be set to [5 sec / 1 min / 3 min / 5 min /10 min].

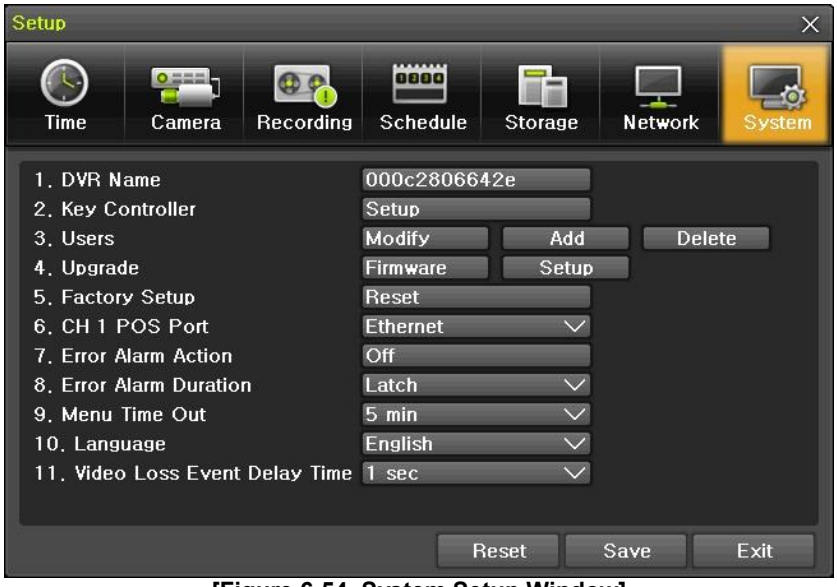
6 - 6 - 5 Bandwidth

Navigate to **{Menu} → {Setup} → {Network} → {Bandwidth}.**

This sets up the limit of the bandwidth to be used when viewing live images, adjusting resolution/quality, and transmitting the data by using the network.

Image Resolution	CIF / D1 / 960H
Image Quality	Adjust quality of the image (as the value increases, the compression rate gets higher and image quality gets lower; however the transmission rate also gets higher)
Bandwidth Limit	Can set network bandwidth between 40 ~ 4000kbps. As the value increases, the network transmission speed gets faster. Select Off to limit network bandwidth.
Transmission Codec	JPEG / H.264

6 - 7 System



[Figure 6-54. System Setup Window]

1. DVR Name	Used to name the DVR device
2. ID For Remote Controller	Used to name the remote controller for running the system
3. ID For Key Controller	Unique system controller number setting
4. User Registration	Used to register, add, or delete users
5. Admin. Password	Used to set password for the Local System Administrator
6. Upgrade	Upgrades system firmware/system setup
7. Factory Setup	Initialize Setup (Factory default value, except for network value)
8. POS	Set Ethernet POS or RS232
9. Alarm	Set alarm On/Off and alarm format
10. Alarm Duration	Set the alarm time to continuous/5/10/15/User setting
11. Menu Time Out	Used to set the time for exiting the System Setup menu automatically and displaying the real-time monitoring screen
12. Language	System OSD language setting
13. Video Loss Event Delay Time	Allows "Video Loss" during setup period until "Video Loss" event occurs (Duration for event can be set to 1/2/3/4/5 seconds)

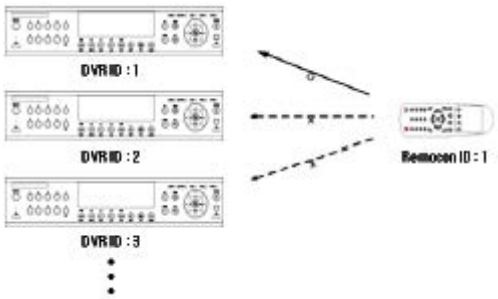
6 - 7 - 1 DVR Name

The initial value is the Mac address. (Up to 20 digits supported)

6 - 7 - 2 ID for Remote Controller

When multiple devices are used, set the remote controller ID to identify input signals with the remote controller.

	As shown below, only the DVR with matching remote controller ID can receive input signals from said remote controller.



① Navigate to **{Menu} → {Setup} → {System} → {Remote Controller ID}**.

② In the selection window, enter ID by using arrow keys and Select button (numbers 0~99 available for ID).

	If the DVR ID is forgotten, set the remote controller ID to 999 to start the DVR. Note, however, that the DVR ID should be the same as the remote controller ID.
	※ **To configure Remote Controller ID** (Example: ID setting as 3) 1) Press {ID} button on the remote controller. 2) Press the {0} key and {3} key. 3) Press {ID} button again. 4) Remote Controller ID is set as 3.

6 - 7 - 3 ID For Keyboard Controller

③ Navigate to **{Menu} → {Setup} → {System} → {ID for Key Controller}**

④ In the selection window, enter ID by using arrow keys and Select button (numbers 1~255 available for ID).

6 - 7 - 4 User Registration

※ Add, edit, or delete the users to operate the system and give authorizations to users as shown below.

System Access Authorization	
Network Live	View real-time images upon network access
Playback	View recorded images
Copy (download)	Copy and download files
PTZ camera	PTZ camera control
Setup	Recording, schedule, system, storage, Time, PTZ, network, and screen setup
Network Upgrade	Remote network upgrade
Covert channel monitoring	View covert channel in the network

Up to 15 users can be registered. Up to 30 digits for ID and Password can be entered.

6-7-5 Admin. Password
Set up the Administrator Password (up to 5 digits).

6-7-6 Upgrade
The firmware and menu settings of the product can be easily upgraded using external or portable storage devices via USB 2.0 port.

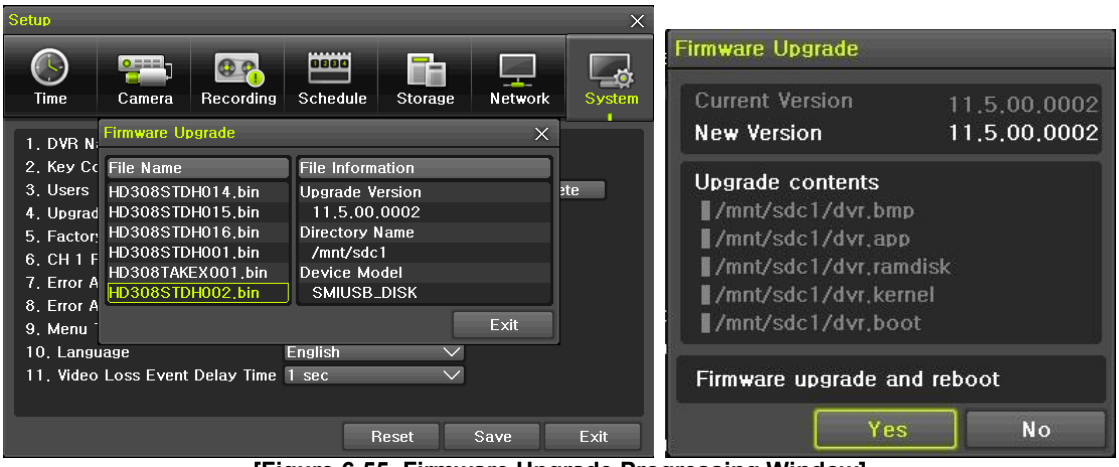
※ Find and copy the upgrade file to the highest folder in the external or portable storage device supporting USB 2.0.
※ Connect the storage device containing an upgrade file to USB 2.0 port at right-side of front panel.

⚠	1) After copying upgrade file to USB device on PC, be sure to properly disconnect device before physically removing it from PC. 2) If the USB device is disconnected from the USB port while the upgrade file is being copied, the DVR system may not automatically detect the file.

⚠ Caution	Do not remove USB from DVR while upgrade is in progress; doing so may cause damage to the system. The DVR will restart when the upgrade is complete.

(2) Firmware Upgrade

① Select **{Firmware}**; the upgrade file list stored in the selected device and simple version information of the selected file are then displayed. After selecting a file, the Firmware Upgrade window will appear.



[Figure 6-55. Firmware Upgrade Progressing Window]

⚠	※ Downgrading to a previous version is not supported. ※ The upgrade information window will appear within 15 seconds.

② Read the information and select "Yes" to start the upgrade process. Select "No" to return to **{System}** mode.

③ After upgrade is complete, the system will reboot.

④ Navigate to **{Menu}** → **{Miscellaneous}** → **{DVR Information}** → **{Software Version}** to check the version.

(3) Setup Upgrade

① Select **{Setup}**; the upgrade file list stored in the selected device and simple version information of the selected file are then displayed.

② Select a file. The upgrade will begin immediately.

⚠ Caution	All setup values of the current menu will be carried over to the upgraded Setup.

6-7-7 Factory Default

① Navigate to **{Menu} → {Setup} → {System} → {Factory Setup}**.

② Select "Yes" when Initialization (Yes/No) Window appears.

Caution	All setting data will be initialized. In other words, all values will return to their factory defaults.

6-7-8 Console / POS Port

① Navigate to **{Menu} → {Setup} → {System} → {Console / POS Port}**.

② In the selection window, select the device by using arrow keys and select button.

6-7-9 Alarm

Alarm is used to notify system incidents [Video Signal Loss/HDD Full/Fan Failure/HDD Failure/HDD Warning] with [Buzzer/E-mail/Relay01/System Check].
Any number of [Off/Buzzer/E-mail/Relay01/Popup Window] can be selected (with exception to "Off").

		※ Popup Window Enable at **{Menu} → {Setup} → {System} → {Alarm}**. When an applicable event occurs, a system check window will appear on screen (as shown). It may indicate: [Video Loss / HDD Full / HDD Not Detect / Fan Failed / Storage Failure / Storage Warning / Sensor Connection Tamper].

6-7-10 Alarm Duration

① Establishes the duration of the alarm triggered by recording and system events

② Navigate to **{Menu} → {Setup} → {System} → {Alarm Duration}**.

③ In selection window, set Alarm Duration by using arrow keys and select button.

6-7-11 Menu Time Out

If no input is made in the System Setup menu via the front buttons, remote controller or mouse, the system will automatically shift to real-time monitoring mode.

① Navigate to **{Menu} → {Setup} → {System} → {Menu Time Out}**.

② In selection window, select and set desired time zone by using arrow keys and select button.

Off	Automatic Menu Exit is not used ※ User can exit menu by pressing **[ESC]** button in System menu.
1/2/3 MIN	If there is no input from the front button, remote controller, or mouse, the system will shift to real-time monitoring mode.
User Setting	A custom time can be set by the user. ※ The time can be set between 1 ~ 60 minutes.

③ Selecting User Setting causes an input window to appear.

④ Enter the time by using numeric buttons or arrow keys and select button.

6-7-12 Language

This feature is used to select the language for the On Screen Display (OSD) menu of the system. 18 languages are supported.

APPENDIX

A/P/P/E/N/D/I/X

Recommended PTZ Camera Protocols

NO	Vendor	Model	Protocol
1	A.D.	ULTRA_7	SENSORMATIC
		ULTRA_8	
2	CHOU	COHU3925	COHU
3	Dongyang	Dongyang	DRX-500
			DY-255
4	DYNACOLOR	DSCP	DSCP
5	EYE VIEW	EYE VIEW	EYE VIEW
6	FINE SYSTEM	CRR-1600i/s	CRR-1600i/s
7	GE	GE	GE_KALATEL
8	GSP	GSP	CYBERSCAN_1
9	HITRON	FASTRAX2	FASTRAX2
10	HONEYWELL	SCANDOME2	HSDN-251
11	LG	LG	LG_MULTIX,
			LG_OLD
12	MIKAMI	MIKAMI	MIKAMI
13	ORIENTAL	ORX-1000	ORX-1000
14	PANASONIC	WVCS854	WVCS854
15	PELCO	PELCO	PELCO – D
			PELCO - P
16	PHILIPS	PHILIPS	PHILIPS
17	PROLINE	PROLINE	PROLINE_UK
18	RIFATRON	RIFATRON-1	RIFATRON
19	SAMSUNG TECHWIN	SAMSUNG	SPD-1600
			SCC641
20	SUNJIN	SUNJIN	SUNJIN
21	VICON	VICON	VICON
22	YOKO	YOKO	YOKO